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**USSR REPORT  
MILITARY AFFAIRS  
FOREIGN MILITARY REVIEW**

No. 2, February 1986

Except where indicated otherwise in the table of contents, the following is a complete translation of the Russian-language monthly journal ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, published in Moscow by the Ministry of Defense.

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## FOREIGN MILITARY REVIEW

### EDITORIAL EMPHASIZES LEADING ROLE OF PARTY IN MILITARY AFFAIRS

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 2, Feb 86 (Signed to press 5 Feb 86) pp 3-6

[Editorial: "The CPSU Leadership--the Soviet Armed Forces' Crucial Source of Power"]

[Text] The land of the Soviets is on the eve of a major historical event. On February 25, the 27th Congress of the Leninist party opens. The Soviet communists' forum is to decide many important questions and, above all, will review drafts of the new CPSU Program, changes in the party charter, and the Basic Directions of the USSR's economic and social development in the 12th Five-Year Plan and to the year 2000. They have been actively discussed in the party and throughout the country and now the Congress must determine their final version and accept the subsequent CPSU activities as basic documents. We are talking about our program goals, about the main questions concerning the general party line, its economic strategy and the forms and methods of work among the masses in the present exceptionally complex and crucial time period, which in many ways is a turning point both in the domestic and international plane.

The core of the draft documents before the Congress is the concept of accelerating the country's social-economic development in order to achieve a new qualitative level for our society. This acceleration, as comrade M.S. Gorbachev noted, "is designed to provide a materially and spiritual rich, and a socially dynamic life for the Soviet people under conditions of peace, to more fully and clearly discover the possibilities and advantages of a civilization of an historically new type, embodied by socialism."

Having set new constructive goals, and perfected the development of socialist society, at the same time we must not forget about the reliable defense of our revolutionary gains against imperialism's intrigues. The CPSU strictly carries out the great Lenin's testament that we must accompany our steps toward peace with an increase in our military readiness. Historical experience has taught us that the class enemies of the new social structure have not missed one opportunity to test its strength through force of arms. Their aggressive attempts have twice led to wars in which the Land of the Soviets was forced to defend, by military means, its right to freedom and independence, and the right of the people to arrange their own lives as they deem necessary. And she

unfailingly came out of the skirmishes thrust upon her victorious because the Leninist Party led the defense of the workers' gains.

Barely out of its birth pangs, the young Soviet state was immediately subjected to an imperialist invasion involving fourteen Capitalist states whose vile purpose was to swim in the blood of a people who had overthrown the exploiters. And after that, as the foreign invaders were being smashed, along with the internal counterrevolution, the imperialists could not refrain from their sinister plans to destroy the new social order through military force.

Our Party indeed became militant and combative in the terrible years of the Soviet people's Great Patriotic War against the fascist invaders. Having taken full responsibility for the course and outcome of the armed combat, unparalleled in scope and size, against Hitler's invasion, it harnessed all its revolutionary energy and will, all the art of political leadership and organizational work among the masses for the attainment of victory.

In the Great Patriotic War, the Soviet people and its armed forces, under the leadership of its own Communist Party, won a world-historic victory against the shock forces of imperialism. In the fierce battles with the enemy, our party became ideologically tempered and strengthened its ranks, and accumulated a tremendous amount of experience in political and organizational work under combat conditions which even today has unvarying significance for further increasing the vigilance and constant readiness of our personnel to defend the Motherland.

The Communist Party's leadership in the defense of socialism, in building the military, and in the development and modernization of the armed forces determines its place and role in the political system of socialism. As the highest form of socio-political organization and the leading force of Soviet society, the CPSU directs the activities of the masses toward achieving the tasks of building communism. Its leadership also embraces the sphere of defending the country against the aggressive intrigues of imperialism. Only the party of the communists, guided in all its multifaceted activities by the sole true revolutionary teaching--Marxism/Leninism--is capable of properly solving the whole complex series of problems relating to defense of the Socialist Fatherland and the theory and practice of military affairs.

The fundamental basis for strengthening the socialist Motherland's defense, as noted in the draft of the new CPSU Program, is the Communist Party's leadership in building the military, the armed forces. In exercising its leading role, the Party develops and executes policy in the area of national defense and security, and Soviet military doctrine, which possesses a particularly defensive character and which is oriented toward defense against an attack from without.

An important advantage of socialist military organization lies in the fact that the leading role in the armed forces' development belongs precisely to the Communist Party. Its leadership embraces various spheres of social life--both those upon which the state's military power depends as well as those of the armed forces which are the personification of that might. In other words, the basic component of party leadership in the military arena comprises a

whole system of measures--from the organization of defense production and the training of military personnel to the activities related to modernizing the armed forces themselves. This whole complex of measures finds its embodiment in the CPSU's scientifically-developed military policy which determines the essence and direction of the activities of the state and public organizations in the area of defense. On this basis, the party carries out a whole variety of activities to create and develop the socialist state's military organization, strengthen the army's and navy's combat might, and the state of readiness of the troops to deliver a crushing rebuke to any aggressor.

The ideological enemies of socialism try in every way to falsify and distort the CPSU's leading role in building the military. They well understand that it is precisely in party leadership that lies the inexhaustable source of permanent development and perfection of socialist military organization, its force and invincibility. Through ideological subversion, the enemies of the new sovial order endeavor to undermine the party's influence and its leading role in the armed forces. To this end, they push in every way the idea of the army's "political neutrality." However, historical experience shows that the slogan "The army is outside of politics" is hypocritical through and through. It is precisely the imperialist bourgeoisie that makes wide use of the armed forces as a tool of its aggressive policies and as an instrument of suppression against the workers, who are rising to struggle against the dominance of monopolies. This is eloquently evidenced by numerous instances of enlisting the army to suppress the proletariat's class actions and national liberation movements and to overthrow progressive regimes in countries which had rid themselves of the colonial yoke.

The CPSU was compelled to take into consideration the complexity of the contemporary international situation and the psycholocial warfare set up by imperialism against the USSR and other socialist countries. World reaction headed by the ultraconservative forces of monopoly capital, primarily the U.S., endeavors to destroy the developing military-strategic balance between the two opposing social systems and to achieve military superiority over the USSR and its allies. Today the American military machine is actively penetrating outer space. Multi-billion dollar allocations are set aside for the establishment of offensive systems there. Under these conditions, the CPSU and Soviet government are doing everything to normalize the international situation, avert a worldwide nuclear war and pave the way toward a lasting and firm peace. However, on the world political arena one must deal with such forces, which are deaf to the arguments of reason. And there our defensive potential plays a restraining role, acts as a tool to avert war and soberly affect all types of adventurers.

The tasks of providing reliable security for the country and the further development and improvement of the army and navy in light of current demands, are complex and crucial. Their successful solution depends upon insight, an objective evaluation of the events in the international arena, and exceptionally cautious but, at the same time, very decisive measures to restrain the instigators of a new world war. In the complex conditions of the present world development, the role of the Communist Party in the organization of the defense of socialism and in the leadership of the armed forces has grown immeasurably. This was engendered, on one hand, by the influence of the

general factors of the increased role of the CPSU in the life of Soviet society. This is related to the growth in the size and complexity of the tasks of perfecting socialism, accelerating the country's socio-economic development, developing its political system, strengthening the cohesion of the socialist countries, cementing the unity of all revolutionary forces, the complication of the foreign policy conditions in relation to the increasing aggressiveness of imperialism and to other reasons. On the other hand, the rise in the CPSU's role in leading the armed forces is conditioned by specific circumstances related to the socialist Fatherland's defense in the present era and to the character of the fundamental changes taking place in the means of armed combat.

The Soviet armed forces' responsibility to the people for providing security for the country and the whole socialist community has grown. The army and navy today carry out duties which no other past military organizations, serving ultimately as a weapon of war, have ever performed. And only Socialist military organization, dedicated to the defense of the workers revolutionary gains, acts simultaneously as a bulwark for universal peace and an instrument to avoid world war. The imperialists are forced to reckon with the combat might of the Soviet armed forces which are capable, as history has shown, of utterly smashing any aggressor.

The rise in the role of the communist Party in the leadership of the armed forces is also conditioned by a strengthening of the dependence of their combat might on the level of the development of the economic, social, scientific-technical, spiritual and military potential. The most important direction of CPSU military policy is the development and strengthening of the material base of the country's defense capability and the combat might of the armed forces. In the interest of providing a reliable defense for the Fatherland, the Party assures the optimal use of all the possibilities of the socialist social order, the planned economic system and the achievements of scientific and technical progress. It considers the qualitative changes in weapons, equipment and the means of armed combat. The CPSU has and, in the future will, do all that is necessary so that the Soviet armed forces are equipped with the best first class weapons.

The military-theoretical activity of the Party has acquired an exceptional significance. The development of Marxist-Leninist teachings on war and the army, of military theory proper, is proceeding successfully under its leadership. Soviet military thought has been enriched by new conclusions and theses. Continuing to summarize and interpret the experience of the past war, it has focused its attention on research into the latest military problems and the basic tendencies in the development of military organization. The character of war and military conflicts in the present era and the status of military-technical thought abroad are being analyzed thoroughly and the corresponding conclusions drawn. The combat potential of the armed forces has become stronger yet. They have taken a new step in their development and perfection.

The rise in the CPSU's role in leadership of building the military was also evoked by the increased significance of the spiritual and moral-political factor in war. The Party tirelessly forms in the Soviet people, and servicemen

in the army and navy, high moral-political qualities, and a readiness and ability to carry out the sacred duty to defend the socialist Motherland to the end. The steadily rising maturity of social relations, the homogenization of classes and social groups, nations and nationalities in the process of perfecting socialism, positively affects the strengthening the social base for recruitment into the army and navy.,

Regardless of the powerful equipment the army and navy may possess, their combat opportunities are manifested only in the hands of people. From this flows the important role of party-political work in assuring the execution of tasks facing our servicemen. Its effectiveness depends entirely upon the commanders, political organs and army and fleet Party organizations which directly carry out the Party's policies among the troops. The entire lengthy experience of our military construction shows that political organs and party organizations are a powerful force in the education and training of servicemen, their mobilization to achieve new heights in military skill, and increasing the combat readiness of the units, ships and subunits. Communists are found at the critical sectors of battle due to their high combat readiness. Through their personal example they lead their comrades-in-arms in fulfilling the obligations they accepted in socialist competition and to storm new heights in combat and political training.

The Party proceeds from the idea that the decisive indicator of the army's and navy's combat might is the high combat readiness to repel and frustrate aggression from wherever it may come. And this readiness is created by the efforts of all personnel and, to an important extent, depends upon the level of combat and political training and field, air, and sea training. One of the items of high combat readiness is solid military discipline. Military organization is unthinkable without firm discipline and solid adherence to regulations. As always, this is all the more true under present conditions. The collective character of modern weapons demands special precision, discipline and great industriousness. The armed forces' execution of the lofty and noble mission placed on it by the party and people depends, as never before, upon a deep recognition by each soldier of his responsibility to the people to defend the Fatherland.

The Communist Party's growing role in the leadership in building the military is also conditioned by the expansion and deepening of the international tasks of the Soviet state and its armed forces to defend the gains of socialism. The CPSU places great importance on the analysis of the experience of the international defense of the new social order, and the activity of the Warsaw Pact. The composition and amount of the tasks incoordinating the defensive efforts of the socialist countries and the scope of the coordination activity are expanding. Matters related to the development of a common viewpoint on various aspects of military affairs demands our fixed attention. In a situation in which the class enemy--imperialism--has formed military blocs in the world arena, the CPSU and all fraternal Marxist-Leninist parties consider it their duty to comprehensively develop the defensive cooperation of the socialist countries. This cooperation is imbued with the spirit of internationalism based on the principles of equality and sovereignty and includes even closer coordination of the development plans of the allied countries' armed forces, the consistent execution of a unified military-

technical policy, the coordination of operational and other measures, and an exchange of experience of training and educating servicemen. The constantly expending fruitful cooperation between political organs and party organizations of the fraternal armies serves this purpose.

The Communist Party shows tireless concern about strengthening the security of our Motherland, and the whole socialist community. During the entire heroic history of the armed forces, the Party led them from victory to victory. The greatest contribution of the Leninist Party lies in the fact that the armed forces are now the first class military organization of our time and capable of defending the gains of socialism against the encroachments of any aggressor.

The Soviet people see the expression of their vital interest in the CPSU's scientifically based policy and, therefore, warmly and unanimously support the strategic course worked out by the Party. They support it with action and creative labor. And our Soviet soldiers now live out these lofty aspirations. They see their sacred duty to defend the Motherland in making her borders inaccessible to any aggressor. The CPSU's policy, its leadership of the armed forces, was, is and will be, a guarantee of invincible defensive capabilities of the socialist all-people's state, and an inexhaustable source of the might of the army and navy of the Soviet power.

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## FOREIGN MILITARY REVIEW

### NATO EXPANSION INTO DEVELOPING COUNTRIES

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 2, Feb 86 (Signed to press 5 Feb 86) pp 7-12

[Article by Col G. Melnikov, Candidate of Historical Sciences, "NATO Expansion into Developing Countries"]

[Text] The struggle against the national-liberation movement is an integral part of imperialism's global policy toward a confrontation with the forces of peace and social progress. American imperialism sets the main tone in this. It was noted in the April (1985) Plenum of the Communist Party's Central Committee, that the "U.S. openly claims the 'right' to intervene anywhere and everywhere, and it ignores, and frequently and directly violates the interests of other countries and nations, the traditions of international intercourse, and treaties and agreements which are in effect. They continuously create the breeding grounds for conflicts and military danger, heating up the situation first in one and then in another region of the world."

Recently, everyone in Washington is talking more frequently about the intention to expand the "geography" for employing forces into developing countries. In this regard, they mention various regions: Southeast Asia, the Near and Middle East regions, Africa and the Caribbean Basin, where the U.S. exhibits a readiness to unleash local wars. The false references of the "threat to Western interests" in these regions, supposedly stemming from the Soviet Union and the national-liberation movements, serve as the justification for these plans.

At the same time, Washington is aware, that in the situation of the rapid growth of anti-imperialistic sentiments toward the United States in liberated countries, it cannot handle the role of the world gendarme. As many Western military experts note, in this sense the U.S. is now at the limit of its capabilities. Secretary of Defense, C. Weinberger emphasized a similar concept: "Relying only upon our own forces, we are not able to repel all the numerous dangers, which can arise in the developing world".

Washington counts primarily on the NATO bloc to carry out an imperial policy, urgently obtaining from the alliance's members their acceptance for a great portion of "global responsibility" for preserving imperialism's positions within liberated countries. On one hand, Washington does not mind shifting

part of the gendarme functions in developing countries onto their shoulders, which is all the more burdensome for them from a political and financial point of view. On the other hand, it wants the partners, by their participation in suppressing the revolutionary actions of the countries, to provide a "multinational" cover for its aggressive policy by using the facade of general NATO responsibility.

The West's antagonistic policy towards liberated countries is closely linked with an adventuristic course in respect to that of the socialist collaboration. NATO, in ignoring the legitimate rights of developing countries and in performing in the role of a "collective colonizer," sees in them, above all, the springboard for the struggle against world socialism.

The participation of the countries belonging to the North Atlantic Union in suppressing the struggle of freedom-loving countries is not a new fact. The entire history of this bloc's existence displays its own long chain of bloody crimes by the "Atlanticists'" against liberated countries. In essence, the NATO partners are involved in all the large armed conflicts in Asia, Africa, and Latin America, i.e., far beyond the boundaries officially declared as the bloc's so-called "zone of responsibility." Currently, the discourse continues for working out within the bounds of the Atlantic union, a common aggressive military-political line, directed against national-liberation movements.

The issue concerning events in the "threatened third world regions" were discussed continuously in the alliance's leadership organs, although attempts were made to conceal the neo-colonialistic essence of NATO's policy. Today all camouflage has been thrown aside. Upon the U.S.'s initiative, the bloc's leadership is openly pressing for the allies to adopt official commitments for the expansion of military intervention into the internal affairs of developing countries. For a long time already, American representatives to NATO have been proposing to reconsider article 6 of the bloc's charter, which determines the boundaries of its "zone of responsibility", and which includes the territories of the member countries, and also the Atlantic region "north of the Tropic of Cancer." Above all, the discourse continues concerning the spread of the alliance's militaristic activities into the Near East and Southwest Asia, the African continent and the South Atlantic.

From the first days of its tenure in the White House, the Reagan administration has noticeably intensified the pressure on its allies in this regard. Ignoring the repeated proposals of the USSR not to expand (on a mutual basis) the spheres of NATO and Warsaw Pact activities into Asia, Africa, and Latin American, American dipolomacy invariably raises this issue at various levels of meetings and conferences of NATO countries' representatives. Such a position by the White House is stipulated by the overall intensification in American imperialism's aggressiveness, and by its striving to consider the West's policy with regard to liberated countries within the general context of the struggle against world socialism. According to Washington's opinion, the expansion of NATO's "zone of responsibility" must compensate for the damage, which imperialism suffered as a result of the breakdown of the SEATO and CENTO blocs at the end of the 1970s.

The U.S.'s estimates do not play in the later role, in that the adoption of this decision puts a reliable political instrument in their hands for drawing the allies more widely into the policy of armed suppression of freedom-loving nations, and helps strongly to implicate them in the aggressive American policy. In this regard, the White house profits from the growing dependence of its partners on the delivery of oil and other raw materials from those regions, where today the national-liberation movement has achieved a special scope.

It is impossible to say that Washington's similar line is finding unqualified understanding in all NATO capitals. However, it was possible for the United States to achieve actual support for its policy from the side of leading North Atlantic bloc countries--Great Britain, the FRG and France. This is evident by their attempt to maintain their positions in liberated countries, and also by the desire not to disrupt the relations with a senior partner. As early as 1980, it was possible for American diplomacy to force through a clause into the final communique of NATO council's session at the highest level, concerning the rights of countries--of the bloc's members--to intervene in the internal affairs of the governments, located outside the limits of its "zone of responsibility". Since then, this clause is regularly included in corresponding NATO documents.

Not waiting for the formal consolidation of the concept for the expansion of the bloc's "zone of responsibility", aggressive NATO circles have, for a long time, already implemented it in practice, coming out in a united front against the peoples of liberated countries. During the events connected with the anti-Shah revolution in Iran, they upheld a unified position, which was hostile to the people of the Iranian peninsula countries, and a naval armada, including American, English and French ships, were sent to the Arabian Sea.

The coordination of the activities of NATO countries in the region of the national-liberation movement was apparent during the Anglo-Argentine military conflict in the spring of 1982. From its very beginning, the bloc's leadership considered the English adventure in the South Atlantic not only as a limited action by an individual NATO country, but importance was also attached to it as a demonstration of the alliance's capabilities to support its global pretensions. The U.S. and NATO leadership achieved a common approach to this conflict by all the member countries. They declared the allies' overall support for the British government's actions in this conflict. In turn, English politicians announced that Britain conducted the war in NATO's name.

Its partners were not limited only by the declarations concerning the solidarity with the English colonizers. Washington rendered significant support to their aggressive course, by giving London material-technical aid and providing the English with reconnaissance information concerning the Argentinian armed forces and the situation in the conflict region as a whole. According to the journal ECONOMIST's assessment, this help played a decisive role in the Argentine defeat.

It was not a chance coincidence that the "Document on the Common NATO Defense," where the expansion of the bloc's "zone of responsibility" was

discussed, was adopted at the height of the Anglo-Argentine conflict, The events in the South Atlantic were used to push through the idea, nurtured for a long time, to expand the geography of the "Atlanticists'" activities. The English admiral, John Fieldhouse, the commander of the aggressor's armed forces in the Falkland (Malvinas) Islands region and who simultaneously occupies an important post in the military hierarchy of the North Atlantic Union, declared that "all the valuable experience," accumulated by the English troops in the war against Argentina, will be passed on to NATO as a whole, and to individual countries which are members of the alliance. He also emphasized, that the combat training, which they receive in modern NATO exercises, came very in handy for the English.

In alliance with the Arab Reaction, the NATO countries went to great lengths to kindle the fire in the African Horn during the Ethiopian-Somalian conflict. At the beginning of the 1980s, the North Atlantic bloc governments' policies, and above all of the U.S. and France, promoted a deepening of the internal conflict in Chad. It was not by chance in the latter, that both countries came out directly on the side of the reactionary forces. According to information from the newspaper FINANCIAL TIMES, the operation of the French troops (codename Manta [Mantle]), in which 3,300 French servicemen participated, was carried out with the U.S.'s material-technical support. Washington's and Paris' cooperation in Chad completely refutes the thesis of Western propaganda, that they allegedly were active in this African country on an individual basis. As is noted in the foreign press, the coordination of their policy does not give rise to doubts.

In all cases of NATO's intervention into the internal affairs of liberated countries, the active role of Washington, which tries in every way to intensify armed conflicts as much as possible, and to involve its NATO allies in them on a broader scale, is overlooked. It is known, how much American diplomacy did its best in instigating France to participate more widely in the Chad conflict. Until now, the heavy responsibility for the breakdown of talks in Chad belongs to both sides.

It is to be emphasized that under similar circumstances, Washington demonstrates a readiness to render all possible aid to the NATO partners in the struggle against the peoples of liberated countries. In turn, U.S. allies in the bloc, as a rule, render wide support to the aggressive policy of its senior partner in the Asian, African and Latin American countries.

In December 1980, NATO's European members promised to activate militaristic preparations in the European theater of war, in order to give Washington a great deal of freedom of action to protect the West's interests outside the bloc's zone. For example, the FRG voiced its readiness to take part of the Pentagon's commitments in Europe upon itself in the event that American troops are transferred outside NATO's boundaries. The West German newspaper FRANKFURTER RUNDSCHAU wrote concerning the fact that Bonn must place the so-called "support corps," of approximately 90,000 men, at the disposal of the U.S. Armed Forces in Europe in the event that GI's are found to be involved in the conflict outside the boundaries of the bloc's zone.

The FRG also took the commitment upon itself to replace American ships in the Atlantic if they are recalled by the Pentagon to carry out punitive actions in the regions of a national-liberation movement, primarily in the Indian Ocean and the Persian Gulf. In accordance with this agreement, some West German ships were directed to the Indian Ocean for a "demonstration of its flag" and as a warning to the independent governments within the region. In order to urge West Germany toward wider participation in the aggressive actions against young independent governments, some NATO political statesmen are pushing for the mitigation of the clause, stated in the FRG's constitution, prohibiting the Bundeswehr's employment in other countries.

In a special brochure, issued in Brussels in 1983 by NATO's European group, it is said, that although the leading role for "protecting the alliance's interests from a threat outside the treaty's zone" falls to the U.S., many European group governments "can render assistance" to the Pentagon "by providing transit and auxiliary services." In particular, the defense ministers of NATO's West European countries announced, that if the United States undertakes any operations in distant regions of the world, then "one or another allied country, on the basis of a national decision, will make an important contribution toward the alliance's security, by providing its units to assist the deployment of American forces." The discourse continues regarding the use of the bloc's military infrastructure to deliver strikes on targets located outside its boundaries, and regarding the undertaking of measures connecting NATO's militaristic actions with U.S. plans to employ the gendarme "Rapid Deployment Forces".

Great Britain is undertaking on its own an interventionist policy in liberated countries. After 1979, the conservatives' government revised the decision adopted earlier not to have its bases "east of Suez" and expanded its military activities in the Near East and in the region of the Persian Gulf.

In December 1983, the deployment of American first-strike nuclear missiles, which threaten liberated countries, began on the territories of some NATO countries. For example, the missiles, deployed at a base at Comiso, Italy, are capable of reaching the northern regions of Mali, Nigeria, Chad, the Sudan and of striking any target on the territory of the Near East and North Africa.

U.S. allies quickly responded to the American partner's call and agreed to include France, Italy and Great Britain in a "multinational force" in Lebanon, whose mission, as the result of the Lebanese and Palestinian peoples' courageous resistance, ended so ignominiously. The sending of a joint naval armada, comprised of the ships of these same Western countries, to the Red Sea in August 1984, under the pretext of the search for mines, was an example of a regular military expedition by the "Atlanticists" which sharply complicated the situation in this region.

Lately, some of the U.S.'s NATO partners are rendering wide support to Washington's aggressive policy in Latin America. They actively participate in the exercises OCEAN VENTURE, SAFE PASS, REDEX, and others, conducted every year in the West Atlantic and the Caribbean Basin under the Pentagon's aegis. In characterizing them, the U.S. Navy's Chief of Naval Operations, Admiral James Watkins, directly stated that the goal of these maneuvers was

"make it understood," that the NATO bloc is capable of transferring large troop contingents to the Caribbean Basin.

The imperialistic governments' readiness for joint operations against freedom-loving peoples finds expression in the creation, within the leading NATO countries, of interventionist forces for the rapid interference in sovereign countries' internal affairs. In the U.S., the "Rapid Deployment Forces (RDF)," numbering more than 300,000 men, are such an instrument. According to the words of the Supreme Commander of NATO's allied armed forces in Europe, General Rodgers, this gendarme corps is intended for use in "crises situations" in "hot spots" outside NATO's boundaries. "The Rapid Deployment Forces" have already been tested by the United States during the intervention against independent Grenada. Currently, the methods for employing the RDF in various theaters of military operations are being worked out in numerous exercises.

Washington proposed to create so-called "Joint NATO Rapid Deployment Forces", aimed primarily at the Near East. Although it did not meet with support from a number of allies, the United States and the bloc's military leadership actively urged the European governments to form similar contingents on a national basis.

In France, the decision to create airmobile "rapid deployment forces", numbering 47,000 men was an important provision in the law regarding the military program, adopted by parliament in the spring of 1985. Their formation was finally completed in July, 1985. Individual subunits of this French imperialist strike detachment underwent actual combat acceptance in Chad. The newspaper FIGARO named their sphere of operations as Africa, the Near East, and Europe. The employment of the RDF presupposes the coordination of Paris' plans with those of NATO. It is not by chance, that foreign military specialists regarded their creation as evidence of France's gradual return to an "integral military command of the Atlantic alliance".

Today interventionist forces are also being developed in Great Britain along the model of the American RDF. Their number is planned to reach 10,000 men. They are intended primarily for armed intervention in the internal affairs of the African and Caribbean Basin countries.

A similar "fire brigade" is being formed in Italy. According to the English SUNDAY TIMES, in a "White Paper", published by the Italian government at the end of 1984, the intention was discussed to create a contingent of 2,000-3,000 men in the event of a "crises" in the Mediterranean Sea or in the Near East.

Since the end of the 1970s, NATO has actively conducted a policy to expand its military presence in the various regions of Asia, Africa and Latin America. And, although the leading role here falls primarily to the United States, some other NATO countries, such as France, Great Britain and the FRG, are endeavoring not to be left out of them. A clause is invariably included in the communiqué of the bloc's 1980s council session, concerning the readiness of the bloc's member countries to deploy their armed forces outside the boundaries of its "zone of responsibility." Although the mentioned clause can be implemented only on the basis of a "national decision," this stipulation

in no way hinders the joining of efforts within the bounds of the North Atlantic Union.

Since April 1982, the troops of NATO countries under the guise of a "multinational force" comprised of troop contingents from the U.S., Great Britain, France and Italy, have become consolidated on the Sinai Peninsula. They actually represent the bloc's own outpost in the Near East.

The alliance's military-political leadership is paying a great deal of attention to the Persian Gulf region as a possible staging area for aggression against the Soviet Union and other socialist governments. Washington is striving for NATO navies to be deployed in this region on a permanent basis.

In its militaristic activities against freedom-loving peoples, the bloc's countries rely on the military bases located on the forward lines, which serve as an advance munition stockpile and accommodation for interventionist forces, sent there in the event of a situation's intensification. The U.S. has the most ramified network of these bases at its disposal. There are more than 1500 military bases and facilities at their disposal, where they permanently deploy more than 500,000 American military servicemen.

The U.S. continues to expand the network of outposts for aggression. Their NATO allies are helping them in this. Great Britain approved of Washington's plans to convert the island of Diego Garcia, located in the center of the Indian Ocean and formerly belonging to it, into a multipurpose base for American armed forces. It also agreed to give its military base on the Island of Masir in the Persian Gulf to the Pentagon for operations against the countries of that region.

With the U.S.'s active assistance, Great Britain itself is carrying out intensive military development on the Falkland (Malvina) Islands, which even today has been turned into a powerful military base. The runway at Port Stanley has been reequipped and British Navy PHANTOM tanker aircraft have been transferred there. The number of personnel in the local garrison exceeds 4,000 men. A British Naval squadron is located in the surrounding waters. A unified formation, the "British Falkland Forces", has been created.

The conservatives' government is trying to convert these islands into one of the vertexes of a triangle of strategically important military bases, in addition to the American [bases] on Diego Garcia and on Ascension Island (in the Central Atlantic). This is connected with London's intentions to employ the British Armed Forces far beyond the boundaries of NATO's region.

Paris, which is trying to strengthen its influence at key points around the world, plays an important role in the build-up of NATO's military presence in the regions of the national-liberation movement. Today a French Naval squadron is performing combat service in the Indian Ocean. French military contingents, numbering approximately 10,000 men, are deployed in a number of African countries. Under the pretext of protecting its lines of communication, France is carrying out a series of measures to further build-up its military presence. An extensive infrastructure development program is being implemented for the potential actions of the "rapid deployment forces"

on the African continent. With this goal, the existing air and naval bases are being modernized and new ones are being constructed in a number of former French colonies: in Senegal, the Ivory Coast, Gabon and others.

One form of imperialism's expansion into liberated countries, currently being implemented widely in the activities of NATO countries, is the conduct of military exercises on the territories of both individual states, and in entire regions. This provides the capability to maintain combat-capable armed forces subunits in various regions for a specific time for the purpose of putting pressure on independent countries. The maneuvers and exercises, along with being open demonstrations of military force, can serve as a cover for the conduct of aggressive actions. The U.S. exhibits the greatest activity. The Pentagon systematically conducts exercises in the Near East, the Pacific Ocean region, Latin America and other regions of the world. It regularly "rattles the sabre" in French Africa. Recently, NATO countries, more frequently are including pro-Western regimes' troop contingents in their troop exercises in order to train them for potential use in aggressive plans.

In the struggle against the national-liberation movement, NATO's military-political circles assign an important position to reactionary anti-national regimes, considered to be imperialism's gendarmes in their regions. Today Israel plays such a role in the Near East, Pakistan in South and Southwest Asia, and the Republic of South Africa in southern Africa, etc., to which imperialistic states show the widest support. As a result, the deliveries of weapons occupy the leading place, which the French journal JEUNE AFRIQUE called the most important instrument of the West's policy in regard to liberated states. And here the leading NATO countries are coming out in a united front. As a whole, not less than two thirds of the world's exports of weapons fall to their share, a significant portion of which is directed to the countries of Asian, African and Latin American countries.

The Reagan administration intends to increase sharply the appropriations for military aid in fiscal year 1986. Of the almost 12 billion dollars, which the U.S. plans to appropriate for military aid to foreign governments, 60 per cent will be allocated to Israel, Egypt, Pakistan and the South Korean regime. A primary role in the U.S.'s and NATO's military-political plans is assigned to them.

The United States, Great Britain and the FRG actively supply weapons to the fascist Chilean dictator, Pinochet. NATO countries, despite the numerous UN decisions, assisted in developing the enormous military potential of the Republic of South Africa, which is considered to be an outpost of imperialism in the rich-in-raw-materials and strategically important southern Africa. The military-political support from imperialistic circles encourages the racist regime to conduct a policy of repression and blackmail with respect not only to national-liberation movements in southern Africa, but also to independent African governments.

Recent events testify to the growth of the aggressive trends in NATO policy in connection with liberated countries. The West, frightened by the growth of the national-liberation movements, wants to suppress the peoples' attempts for independence by relying on force. There is no doubt that all imperialism's

attempts using "concentrated force" fails to deal with freedom-loving governments. However, it is impossible to underestimate the serious danger of NATO's militaristic course to the developing world. It creates a threat for all nations, and harbours the capability to antagonize old hotbeds of tension and to create new ones, developing them into conflicts on a wider scale.

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## FOREIGN MILITARY REVIEW

### CERTAIN ASPECTS OF GREAT BRITAIN'S MILITARY PREPARATIONS

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 2, Feb 86 (Signed to press 5 Feb 86) pp 13-14

[Article by N. Nikolayev; "Certain Aspects of Great Britain's Military Preparations"]

[Text] The end of the 1970s, and the beginning of the 1980s, were marked by the noticeable strengthening of militarism's influence on all aspects of life in the main capitalistic countries. Besides the United States, this trend became apparent in the most distinct form in Great Britain with the accession to power in 1979, of the government headed by M. Thatcher, representing the conservative party's radical right group.

In spite of difficulties being suffered by the British economy, the conservatives immediately started a military potential build-up, which was reflected first in the dynamic growth of Great Britain's military expenditures. In 1979, according to this index (19.1 billion dollars), it was in fourth place in NATO behind the U.S., the FRG, and France, and in 1983, after the conservatives had been in power four years, it already moved to second place in the bloc (after the U.S.) with respect to the volume of military expenditures (around 24.4 billion dollars), their portion of the GNP (5.4%) and by total per capita.

In the conservatives' military program ("The United Kingdom's Defense Program--the Further Course) published in the British government's White Paper (1981), the emphasis was placed on increasing the combat capabilities of the armed forces. Four main directions in military development were noted in it: the development of strategic nuclear forces and nuclear forces in the theater of military operations; the improvement of the country's territorial defense; the increase in the combat capabilities of the ground forces and air force, located in the FRG; maintaining the navy in the East Atlantic and in the English Channel zone.

The M. Thatcher government is devoting its main attention to equipping formations and units with modern weapons and equipment models. For example, in the 1984/85 fiscal year, the part of the military budget going for the acquisition of military equipment reached 46 per cent (in 1980/81 it was 41 per cent). Specialists believe that such an increase in appropriations will

allow the English command to carry out a number of large military programs in spite of the extraordinarily high cost of modern armament systems and the colossal expenditures for the development of the British strategic nuclear forces. In particular, it is planned to carry out the deployment of the airborne early warning (DRLO -long range early warning) and control system based on the NIMROD aircraft, and accept two modified TORNADO aircraft for air force's service--the F-2 fighter-interceptor and the GR-1 fighter-bomber. The ground forces are being equipped with modern CHALLENGER tanks. The construction of Project 2400 TRAGALGAR-Class nuclear attack submarines is in progress, and they started the construction of Project 2400 diesel submarines. The Project 23 frigate has been produced and the EH-101 helicopter is being developed. In 1985, the antisubmarine aircraft carrier ARK ROYAL, the third in succession of the INVINCIBLE-Class, was commissioned.

The conduct of the exercise PLAIN HAT by Great Britain in the spring of 1984, within the framework of the NATO maneuvers AUTUMN FORGE-84," was a graphic demonstration of the conservative government's militaristic course. Participating in it were 132,000 soldiers and officers of Great Britain and its NATO allies, and 58,000 English servicemen were transferred to the FRG's territory from the British Isles. This was the largest troop transfer to the European continent since the time of the allied landing in Normandy in 1944.

However, the enumerated actions far from exhaust the militaristic content of the conservatives' policy. The development and build-up of nuclear weapons, as usual, occupies the central position in the country's leadership's military plans. When the conservatives came to power, 64 POLARIS-A3 SLBMs, purchased in the United States and deployed on 4 English-built SSBNs (16 on each), represented the British so-called independent strategic nuclear deterrent resources. The POLARIS-A3 missiles, which have a firing range of 4,600 km (circular error probable of 900 m), were equipped with separating warheads (three 200-kt warheads), developed and manufactured in Great Britain. The English SSBNs are intended for transfer to NATO's Allied Armed Forces in the event of war, and the targets against which they deliver strikes are determined by a single strategic target operational fire plan (SIOP) generated by a U.S. Chiefs of Staff committee.

English specialists completed the warhead modernization program for the POLARIS missiles during the conservative government's years. In 1985, all British SSBNs were equipped with missiles having new warheads, and were designated POLARIS-A3TK. As the foreign press reports, this system includes six 40-kt individually-guided warheads.

In 1982, the military-political leadership decided to deploy a more modern sea-launched nuclear missile system, the basis of which are new generation SSBNs, equipped with TRIDENT-2 ballistic missiles produced in the U.S. (the warheads on them will be English). According to foreign press information, it is planned to construct four ships (the order for the lead one was placed in 1985) each having 16 missiles. The missile's warhead will have eight individually-guided warheads. There will be a total of 512 nuclear charges on the four SSBNs.

The decision to modernize the English strategic nuclear force was one of the most important steps in London's military policy in the last 40 years. It predetermined the British government's negative position regarding the issue of taking British SLBMs into account in Soviet-American nuclear arms limitation talks.

The decision to deploy the TRIDENT system demonstrated one of the main features of contemporary British militarism, that is, its inseparable connection with the U.S. Clearly, English-American "special relations" are most distinctly evident in the military sphere, the central place of which was and is occupied by the partnership in the realm of nuclear weapons. Therefore, it is not surprising that Great Britain's conservative government was the U.S.'s main European accomplice in carrying out the deployment plans for new American nuclear weapons in Western Europe--464 ground-launched cruise missiles and 108 PERSHING-2 ballistic missiles.

M. Thatcher's government actively assisted the American administration in rendering pressure on wavering West European partners. It agreed to deploy on its territory a greater number of cruise missiles (160) in comparison with other bloc countries. After NATO's leadership decided to deploy new nuclear missile systems in Europe, Great Britain's military-political leadership was the first among U.S. Western European allies to offer to deploy six detachments in Greenham Common and four in Molesworth.

The militaristic essence of the conservative government's policy is distinctly apparent in the colonial realm. The Falkland adventure was one of the largest scale actions of Great Britain's armed forces since the end of the Second World War. Now, the English command is speeding up the reinforcement of the British military base in the Falkland (Malvinas) Islands. Huge resources are being directed toward these goals. The appropriation for this purpose was 624 million pounds sterling in the 1983\84 fiscal year. These islands are not the only place in the world where Great Britain's military presence is being maintained. Its bases are located on Gibraltar and Cyprus, and also in Hong Kong, Brunei and Belize.

Remaining a true "Atlantic solidarity", the conservative government participated in a number of militaristic actions together with the American administration. For example, from 1983 through February 1984, more than 100 English servicemen were part of a four-power "multinational force" in Beirut. Great Britain left there only when the failure of the armed intervention in the affairs of Lebanon, undertaken by Washington, became an obvious fact.

Not satisfied with the build-up of nuclear and conventional weapons, the conservatives' government came out in support of the American "Star Wars" plan, the main goal of which is the development and deployment of a new class of weapons--large scale nuclear space systems, and also the simultaneous large-scale build-up and improvement of the offensive nuclear capability. In London, they justify the course taken by Washington for undermining Soviet-American antimissile defense talks and are coming out with far-fetched fabrications aimed at the Soviet Union. For example, in 1985, in the "White Book Regarding the Defense Issues" the M. Thatcher government declared: "Research in the realm of antimissile defense (PRO) is permitted by an

existing treaty, and, considering the fact that the Soviet Union has been carrying out its own vast research program for a long time, it is important that the West not fall behind in this realm." While London supports the American "Star Wars" plan, it is far from being unselfish. Great Britain's right wing circles expect to receive for British firms contracts in the amount of up to 1.5 billion dollars for developing the arms race in space.

It is evident that Great Britain's military preparations are actually a supplement to U.S. efforts, directed at achieving military superiority over the USSR. To a great extent, Great Britain's government's course in inflating the arms race, to a significant degree, is contributing to the present dangerous complication in the international situation, and the conservatives must bear the full responsibility for this.

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## FOREIGN MILITARY REVIEW

### AMERICAN PORTABLE LABORATORY KITS FOR TROOP MEDICAL SERVICES

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 2, Feb 86 (Signed to press 5 Feb 86) pp 17-18

[Article by Col (Reserve) A. Ivanov, Candidate of Medical Sciences; "American Portable Laboratory Kits for Troop Medical Services"]

[Text] Based on foreign military specialists' views, infectious and other diseases among personnel are an important factor in lowering the fighting capacity of troops. An analysis of experience in past wars shows that the number of personnel in the U.S. armed forces hospitalized for infectious diseases exceeds those admitted for treatment on account of wounds and other combat injuries. In peacetime, infectious diseases in the American forces constitute the main reason for losses in fighting ability and personnel hospitalization. In view of this, the U.S. armed forces command is presently paying a great deal of attention to the prophylactics of infectious diseases and is improving their diagnosis and treatment.

Along with measures to increase the qualifications of medical personnel, the development of more improved diagnostic methods and equipment suitable for use in troop units and aboard ship is underway. A biological research branch of the U.S. Naval Medical Research Center (in San Diego, California) has created portable laboratory kits (outfits) for use by the medical services within the forces. One of these kits is a portable microbiology laboratory intended for rapidly diagnosing infectious diseases most frequently encountered in troop activity. The other one is a portable clinical laboratory that allows one to conduct basic clinical analyses necessary in treating the sick. It is intended that both of these kits be used together so they will complement one another.

The portable microbiological laboratory fits in an easily-portable plastic box (dimensions: 46 x 39 x 21 cm), which, when fully loaded, weighs 15 kg. Inside the box there are places to hold the individual items separated by styrofoam. This keeps the kit from getting damaged during transport and provides thermal insulation. The kit contains:

-- a portable microscope (a MacArthur microscope, 5-6 times smaller than a common one). It can be used either hand-held or mounted on some sort of support. Base illumination is achieved by a special battery-operated lamp or sunlight.

-- a device (15 x 15 x 8 cm) to do electrophoresis on blood, urine and other clinical samples. It runs on 110-220 volt AC current or 12 volt batteries. It can simultaneously analyse 20 samples.

-- a water-heated incubator (thermostatic regulator) (24 x 12 x 10 cm) that runs on 110-220 Volt AC current or 12 Volt batteries. It will hold 34 testing samples.

-- a device to examine the results of processed samples. It has a darkened background and base lighting using an oblique beam from a battery-powered lamp.

-- a device on ion-exchange columns to sterilize water needed to prepare reagents.

-- a device to dye smears of materials to be examined on specimen slides, so as to minimize the expenditure of dying materials.

-- expendable materials (dyes to prepare smear, supply materials, etc.)

THE PORTABLE CLINICAL LABORATORY goes inside a plastic box with a handle (dimensions: 52 x 38 x 22 cm), with styrofoam glued to the inside. The kit weighs 10 kg when fully packed. It contains:

-- a spectrophotometer to take readings on the amount of glucose in the blood.

-- a centrifuge (20 x 6 x 9) to process blood and urine samples in capillary test tubes. It works on 110-220 Volt AC current or special batteries.

-- a device to determine the amount of glucose and urea in the blood serum, as well as to do urinalysis.

-- reagents to test the blood for syphilis and mononucleosis.

-- a chamber to count standard blood cells with special pipets and an eyepiece for a microscope.

-- expendable materials (reagents).

In 1980 and 1981 the laboratory kits described above were tested in the Army and the Navy (in Marine subunits and aboard ships). Field testing took place during field exercises in jungles (Panama), under cold climatic conditions (Norway) and in deserts (Africa). Each of the devices performed several dozen analyses. The derived experience showed that under complex troop conditions, on the whole, the devices gave diagnostic results which were comparable with the results of well-equipped laboratories in permanent infirmaries and medical centers. Based on information in the foreign press, outfitting the forces with such kits will allow one to do skilled laboratory diagnoses of infectious and other diseases directly under field conditions.

However, specialists have noted a number of deficiencies in these kits. The packing can be penetrated by dust which causes a deterioration in the operation of individual kit components. Under cold climatic conditions where the kits are operated in shelters where the temperatures run from 4 to 15° C, the readings of the spectrophotometer, when taking down test results, were depressed by 2-3 per cent; the water-heated incubator does not rise above 20° C, the process of dying smears on specimen slides is slowed down; and the operating time of the batteries to feed the centrifuge is significantly reduced. The majority of these deficiencies has been eliminated. The design of the boxes to house the contents has been improved, providing protection from dust and water penetration. The kits have been reequipped with rechargeable batteries, which permits them always to have an autonomous electric power supply sufficient for operation in conditions with low temperatures.

At the present time, improvements in the kits are continuing. In particular, the possibility of expanding the range of analyses to diagnose infectious disease is being studied since experience has shown that by using them, it is possible to conduct analyses that are necessary only for the diagnosis of bacterial intestinal diseases (dysentery and other similar infections). Diagnostic reagents for a wide range of bacterial, fungus, and viral infections have been put into the kit. Separate modules have been developed for the portable microbiological laboratory that can diagnose specific groups of infectious diseases. Such modules are selectively inserted into the kits by the medical services before the troops are deployed in keeping with the kind of infectious diseases that, according to intelligence data, might be encountered in the deployment area. Furthermore, it is planned that the kits will contain substances which have been developed based on achievements in immunology and immunogenetics (for example, reagents to cause immunosorbent reactions). The possibility is being studied to include preparations of monoclonal antibodies in the kits to increase the sensitivity and specificity of the analyses, as well as to expand the scope of express diagnostic procedures. Modules have been developed for portable clinical laboratories where all the necessary analyses to create blood banks under troop conditions can be provided.

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## FOREIGN MILITARY REVIEW

### THREAT PERCEPTION: 'SAM BATTERY OF THE U.S. HEAVY DIVISION'

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 2, Feb 86 (Signed to press 5 Feb 86) pp 19-26

[Article by Lt Col M. Vanin; "U.S. "Heavy" Division's Air Defense Battalion"]

[Text] The political-military leadership of the U.S., while nurturing plans for unleashing new wars, is taking large-scale measures to build up the combat power of its armed forces. A special role in these aggressive preparations is assigned to the army, which is currently carrying out the biggest reorganization of forces in its history under the "Army-90" program. Great attention is being paid to the air defense (AD) forces which, as noted in the foreign press, are one of the most important means of protecting forces and have a significant influence on the course and outcome of combat operations. American military specialists believe that accomplishing such measures as equipping AD units and subunits with modern antiaircraft weapons, introducing new organizational structures into AD formations, and improving their capability to carry out combat actions, will substantially increase the potential to cover a force from enemy air strikes.

As reported in the foreign press, major changes have taken place in the AD battalion of the "heavy" divisions (mechanized and armor), which have the mission of covering their brigades and battalions from strikes by enemy aircraft and helicopters at high or low altitudes. The modernization of the battalion's equipment and changing of its organizational structure is partially completed and is continuing. In particular, combined VULCAN-STINGER batteries have been formed along with batteries of STINGER antiaircraft missiles, and changes in the number of launchers in the platoons of CHAPARRAL missile batteries. The number of AD guns in them has grown by 12 (from 24 to 36) and CHAPARRALS have decreased by six (from 24 to 18). Introduction of STINGERs into the battalion armament, as American military specialists note, has made it possible to concentrate all of the organic battalion air defense assets in one formation--the AD battalion. This centralization of air defense weapons, in their view, on the whole increases the potential for controlling AD systems during a battle and the flexibility for using them to cover the most important sectors, and will enable increasing coordination of the AD organizations of the "heavy" division.

At the present time, a new organizational structure for the air defense battalion of the "heavy" division has been established and the transition to it has begun and will be carried out according to the delivery of new and modernized air defense weapons (1).

The organization of the air defense battalion (Fig. 1) includes a headquarters and six batteries; headquarters, three VULCAN self-propelled anti-aircraft guns, a STINGER missile battery and one each Chapparel and STINGER. The combined strength is about 860 personnel, including 46 officers. There are 18 CHAPARRALS, 36 VULCANS, 75 STINGERS (firing crews), 8 FAAR radars for acquiring low-flying targets, 21 M113A1 APC, various weapons, antitank weapons, vehicles, radios and other military equipment.

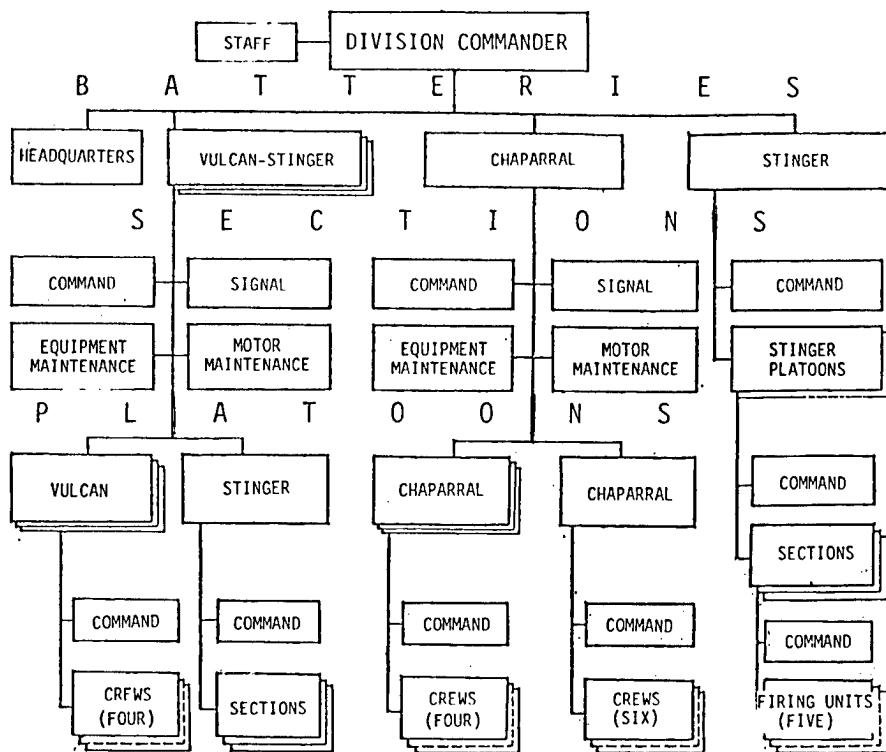


Figure 1. U.S. "Heavy" Division Air Defense Organization

THE HEADQUARTERS AND HEADQUARTERS BATTERY (173 men) consists of nine sections (command, administration, operational and fire control, coordination and liaison air space control, medical, rear service and supply, signal, maintenance and repair) and a radar platoon.

The command section (11 men) includes the chief of staff (deputy commander), officer operators, battalion signal officer, and mechanics-drivers.

The administrative section (nine) is designated to perform the administrative-technical staff duties.

The operations and fire control section (16) controls the combat activities of the battalion as well as the acquisition and data processing on air targets and the dissemination of fire commands to the firing subunits. It has two crews, one of which mans the battalion command center, and the other the combat situation information processing center.

The coordination and liaison section (13) is responsible for the coordination between AD battalions, corps antiair assets (I-HAWK or Patriot battalions) and covered units.

The control section for enemy air (seven) is designed to coordinate antiair activities in the division and to warn the division CP of an air attack.

The medical section (12) provides aidmen to the firing subunits, renders first aid to wounded and organizes their evacuation.

The supply and rear services section (ten) plans, coordinates, and organizes all rear services activities for the battalion.

The signal section (23) organizes continuous radio communications between the battalion staff and the firing subunits, between the higher echelon AD units and covered brigades, when necessary establishes wire communications, and conducts maintenance and repair for the battalion communications equipment.

The maintenance and repair section (38) conducts maintenance of the armament of the headquarters battery and the STINGER battery.

The radar platoon (35) is designed to acquire and designate low-flying air targets and transmit target data to the operations and fire control section and the firing units. It consists of a control platoon, eight radar sections and a radar service section. Each radar section has one FAAR radar for acquiring low flying air targets. The service section carries out scheduled maintenance and routine radar repair.

THE VULCAN-STINGER BATTERY (148 men) includes four sections (command, signal, equipment maintenance, and motor maintenance), three VULCAN gun platoons, and a STINGER platoon. It has 12 VULCAN and 15 STINGER (firing crews).

The control section is designed for combat control of the firing platoons and their service support, including receipt of ammunition from the headquarters battery and its distribution to the platoons.

The signal section lays wire between the battery's subordinate units, and also conducts maintenance and repair of signal equipment.

The equipment maintenance section repairs and services the radar equipment of the antiair guns and missiles, for which it is equipped with a van with test equipment and spare parts.

The motor maintenance section conducts service and maintenance of battery vehicles (the section has a maintenance-recovery vehicle and a 12-ton crane).

The VULCAN platoon has a command section and four crews (one gun per crew). The command section organizes the combat activity of the platoon and supplies ammunition, for which it has two vehicles, each serving two guns.

The STINGER platoon consists of command and three sections (five firing crews each).

THE CHAPARRAL BATTERY (160 men) includes four sections (command, signal, equipment maintenance, and motor maintenance) and four missile platoons. Organization and mission of the sections are identical to those of the VULCAN-STINGER Battery, but the organization of the CHAPARRAL platoons is different. Each consists of command and crews (three platoons have four and one has six). The command section organizes the combat actions of the platoon, supplies missiles, conducts route reconnaissance for movement, and selects firing positions. The battery has a total of 18 CHAPARRALS.

THE STINGER BATTERY (83 men) consists of a command section and two platoons, which are parallel in organization to the STINGER platoons in the VULCAN-STINGER Battery. Altogether it has 30 STINGER (firing crews).

American military specialists believe that this air defense organizational structure, combined with modern AD equipment, could raise the reliability of covering the "heavy" division's units and subunits from enemy air strikes, especially from low or very low altitudes in all areas of its offense (defense). Selection of the form of combat deployment of the battalion will depend on the tactical-technical characteristics of the AD assets, and the accomplishment of the principal provisions of the concept of "Air-Land Battle", which prescribes the method of conducting ground combat in the period to the year 2000.

Currently, the armament of the AD battalion, judging by foreign press reports, consists of the M48 CHAPARRAL, modifications to which, in military experts' opinion, will allow it to be retained in service until the end of the 90s. The system is a mobile platform which can independently detect and engage air targets flying at speeds up to 500 m/sec, at distances from 800 to 4,000 m and at altitudes of 15 to 2,500 m, both from the halt and while moving (with a short pause) with a reliability of 0.4-0.7. Time from a movement to combat condition is 5 minutes, from combat to movement, up to 3 minutes. The system consists of a launcher with four guide rails mounted on an M113A1 tracked amphibious APC, an optical sight and fire control. System effectiveness has been raised by the addition of a FLIR which makes it possible to detect and target low-flying air targets at night. The combat load includes 12 missiles, four of which are on the rails and eight in the ammunition compartment. The launcher is reloaded manually (the missiles weigh 84 kg). A passive infrared homing system on the missile permits firing at a rate of four missiles per

minute. In order to increase protection against countermeasures and the potential to engage targets head-on, an improved missile with a seeker head operating on two wave lengths is appearing. A CHAPARRAL crew consists of five personnel (commander, gunner, driver and two observers).

The M163 VULCAN antiaircraft gun can fire on enemy aircraft and helicopters from the halt and while moving (with a short pause). Mounted, as the CHAPARRAL is, on an M113 chassis, the launcher is equipped with a 20-mm six-barreled automatic machine gun in a rotating turret, a target-tracking radar, a computer and optical sight. Being an autonomous air defense system, the VULCAN can independently detect and track all targets flying at speeds of up to 300 m/sec, at distances of up to 1,500 m and altitudes of up to 2,000 m. The firing rate of the system is 3,000 rds/min, the combat load is 6,000 rounds. The foreign military press notes that, under certain conditions, the VULCAN can also be used to engage ground targets including lightly armored ones. American military specialists describe shortcomings of the VULCAN which lower its effective coverage, including the absence of a means of detecting and engaging targets except in daylight and clear weather. The VULCAN crew consists of four persons (commander, gunner, assistant gunner, and driver).

The manportable STINGER is replacing the REDEYE, which is being retired from service in combat, reconnaissance, and field artillery battalions. This system, in specialists' opinion, significantly increases the effectiveness of the AD battalion in combatting low-flying enemy airplanes and helicopters. A firing team (commander and gunner) possesses communications and IFF equipment for air attack and can simultaneously engage two single targets or one group of targets not just from the rear (as REDEYE), but head-on from the halt and from the march (with a short pause). In so doing, it will engage and destroy, with a probability of 0.4 to 0.6, all targets flying with speeds up to 400 m/sec at ranges of from 500 to 5,200 m (from the rear) or to 1,000 m (head-on) and at altitudes from 30 to 3,500 m. The basic load consists of 10 missiles in transport/launch tubes, which are carried on a jeep. A new missile is being developed to protect against countermeasures based on a seeker which works both in the infrared and ultraviolet wave lengths.

The foreign military press notes that troop AD assets should protect the ground force combat operations, covering them from air strikes. It is believed that such basic principals of the Air-Land Battle concept as initiative, depth, speed, and coordination will be considered during the development of tactics for AD formations. American military specialists suggest that the organization and conduct of defense of Army division and brigades should be developed, guided by these organically-interrelated principals.

INITIATIVE is found in the rapid transition from centralized to decentralized employment of AD assets; it is reflected in independence and strict goal-directed utilization of separate AD units and subunits for accomplishing the main task. Therefore commanders are advised to make decisions based on calculated risk, skillfully accomplish any achievable goal which is in their interest, and when necessary, diverge from conventional methods of accomplishing their missions. DEPTH is defined by time, spacing and range of the AD weapon systems and is a component of the timely organization of AD

throughout the depth of the area of operations and in engaging the enemy at the maximum possible range. SPEED is understood to include possible regrouping of AD forces on the likely enemy air attack threat axis in a short period, flexibility of employment on the battlefield, and the capacity, with undiminished effectiveness, to provide cover during sharply changing situations and transitions from one form of combat to another. COORDINATED ACTION comprises unity of action by the AD brigades and battalions with the ground forces, and the possibility of massed fires for inflicting maximum losses on the enemy, especially in critical situations. Air defense units and subunits also should support close cooperation with combat support units and army and tactical aviation.

The Air Defense Battalion commander (who is also the division AD chief), organizes AD for the division units based on the division commander's decision, the situation, and available forces. As noted in the foreign press, in determining the organization for combat for the air defense units, the necessity to have unbroken coverage of the entire sector of the offense (defense) is given consideration. However, American military experts believe, the division's air defense assets alone will be insufficient to accomplish such an effective defense. Therefore, AD of a "heavy" division will have a strong-point character in which the division and brigade CPs will be defended first, then combat and field artillery battalion formations, helicopter bases, communications centers, stores, ammunition supply points and fuel depots. The AD battalion commander will, therefore, establish the following order of covering assets. In the offense first priority is to units and subunits in the main attack, in a retrograde - to the units and subunits securing the withdrawal, and in the defense - to rear areas, field artillery, CPs and reserves.

While organizing the division AD, the battalion commander, considering the tactical-technical characteristics of his AD weapons, will provide coverage for mobile units by mobile AD systems (VULCAN and STINGER) while CHAPARRAL, as a rule, not being sufficiently capable of conducting fire on the move, is assigned coverage of less mobile or stationary facilities. A general plan for distributing the battalions weapons could be as follows: each combined VULCAN-STINGER battery is assigned to a brigade; the CHAPARRAL battery covers the division CP (with the six-launcher platoon) and stationary rear area facilities; and the STINGER battery disperses to cover field artillery battalions.

The final decision as to which activity to cover is made by the battalion commander based on an evaluation of the ground and air situations, the nature of combat activities by divisional units, the availability of weapons systems, ammunition, and other factors.

Thus, in American leaders' opinion, the combined VULCAN-STINGER battery, detailed to provide coverage for a brigade (with four battalions), may employ its assets in a number of variations. In the offense from a position where there is direct contact with the enemy, it is recommended to cover two first-echelon battalions with STINGERs (one section per battalion), and each of the two second-echelon battalions with a VULCAN platoon (two per company of the first echelon). The third platoon of guns could be employed at the brigade CP

and the AD battery CP, and the third missile section for the brigade rear. In organizing an offense from the march, two battalions of the first echelon in the main attack, each should be covered by a platoon of VULCANS, and the third, in the secondary attack, by a section of STINGERs. A battalion, following in the second echelon of the brigade, may be reinforced by a STINGER section. The remaining assets are used to cover brigade and AD battalion CPs and the brigade rear.

In the foreign military press it is emphasized that the most effective employment of AD assets against enemy air is obtained when divisional activities are covered by combined AD units consisting of CHAPARRAL, VULCAN and STINGER, whose combined employment makes it possible to create a reliable system of fires. Therefore, to cover the battalion task forces organized in battle, combined AD organizations may be assigned comprising a platoon of VULCANS and a section of STINGERs. In the offense, VULCANS are attached to first echelon companies (two guns per company), with missions to cover the second echelon companies, and the Task Force CP, and the rear area are given to the STINGERs. In the defense, a VULCAN platoon is used, as a rule, centrally, and guns are placed on the most likely enemy air approaches, usually on the flanks of the task force, in gaps between companies, and in places which can provide cover both against air and ground targets. STINGER crews are deployed one per company as well as to cover the task force rear and CP.

The FAAR radar which detects low-flying air targets may be attached to firing batteries, platoons, or combined teams. However, as noted in the foreign press, the most effective way to reconnoiter the air threat is achieved by centralized employment. It is recommended that they be evenly distributed over the division sector on offense or defense so that the entire region is covered by radar. Information on air targets is transmitted to firing organizations and the battalion CP (to the operations and fire direction section). Information about the air enemy from corps air defense units is received through the organization and liaison section in the battalion CP. After analyzing the air situation the battalion combat control center issues commands by radio or telephone to the firing organizations on destruction of targets. American experts note that under conditions of massive enemy air strikes, all battalion organizations must be ready to fire and independently acquire air targets.

In the offense (defense) CHAPARRAL positions are selected considering the possible intercept of enemy aircraft along the most likely air approaches and provision of all-around AD. Launchers occupy firing positions at places which ensure mutual support at distances of 3-4 km from each other. When there is not a sufficient number of AD assets, the CHAPARRAL units' combat order can be structured taking into consideration coordinated coverage of the zone to achieve a dispersion of 5 km between them.

It is advisable to place STINGER teams directly in the subunits being covered or behind them. Firing positions are selected to prevent, to the maximum extent possible, influence by enemy fires. If the subunits' combat order and the numbers covered by STINGER teams allow, AD is organized with consideration of ensuring mutual support of neighboring teams. As American military

specialists note, this is achieved at ranges, of 2-3 km from each other. Firing positions should provide visual detection of low-flying targets at distances of not less than 6 km. In certain circumstances, the STINGER section leaders, considering the vulnerability of the teams, may decide to deploy the teams with armored cavalry, engineer and other combat support subunits. In a retrograde, STINGER teams are positioned with consideration of all-around defense of subunits from air attack and the ability to join the column quickly at the initiation of movement. These firing positions are placed at distances of 400-600 m from the covered subunits and in the direction of probably enemy attack.

VULCAN firing positions are placed to ensure the possibility of intercepting targets on the principal enemy air and helicopter attack routes under conditions of maintaining fire channels with each other. The foreign press notes that the distance between guns should not exceed 1,000 m.

In American military specialists' opinion, despite the fact that the CHAPARRAL, VULCAN, and STINGER can independently detect and engage air targets, they should be used as members of platoons and batteries, since maximum effectiveness and functioning is achieved that way, control is improved, and reliable coverage is obtained. In the defense, part of the firing assets of the airborne battalion can be detailed to operate as part of an ambush or roaming subunits. In designating a sector of operations and movement routes for AD weapons, considerations are their capabilities and the ability to cover likely concealed avenues of enemy air approach or enemy landing zones.

It is noted in the foreign press that in combined subunit operations, it is not advisable to place [all] weapons in a single position, since this will to a significant extent, reduce not only their firing capabilities but will also reduce the effectiveness of the entire AD system. In American commanders' opinion, STINGERS should be placed at a distance of 1.5-2 km from VULCANs and Chaparrals, and VULCANs up to 1 km from CHAPARRALS. In this way, mutual support in the coverage zone is assured, joint engagement of critical air targets, and missile lock-on to the trace of the VULCAN rounds is prevented.

On the march weapons can be deployed within columns of the covered subunits and march with them ready to repulse attacks or deployed on firing positions along march routes in positions most attractive to enemy airstrikes (road junctions, crossings, defiles, stopping places, refueling points, etc.). Foreign military specialists believe that the VULCAN and STINGER should be placed in march columns to protect a force on the march. In order to create unbroken coverage of AD coverage, weapons are dispersed evenly along the column, with the distance between STINGERS not exceeding 3,000 m and VULCANs, 100 m. If the weapons are not sufficient for organizing AD, the recommended course is to concentrate the principal forces on coverage for the head and tail of the column. When there is an advance guard, STINGERS will be deployed with it. As noted in the press, CHAPARRALS can be employed most effectively by timely displacement to firing positions along the routes with a distance between weapons not to exceed 2,000 m.

As reported in the Western press, the U.S. Department of the Army continues to make plans for the long range improvement of division AD units and organizations. Work goes on to improve the VULCAN which could, after improvements, stay in service until the mid-90s. Further augmentations are planned for STINGER crews and equipping them with their own means of searching for air targets to a range of 20 km. New air defense systems are being developed with the goal of raising the effectiveness of the AD of "heavy" divisions.

1. According to reorganization plans for the air defense battalion of the "heavy" division of the U.S. Army, the battalion will be given the new M247 SERGEANT YORK antiaircraft gun (36 units). However, in this connection, a decision was made in 1985, to curtail programs which were financing development and production of this system, and the VULCAN gun remains in the armament of the battalion. M.V.

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## FOREIGN MILITARY REVIEW

### MEANS OF CAMOUFLAGE, DECEPTION IN NATO COUNTRY ARMIES

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 2, Feb 86 (Signed to press 5 Feb 86) pp 26-32

[Article by Col L. Sergeyev; "The Means of Camouflage and Deception in NATO Country Armies"]

[Excerpts] In recent years Western military specialists have frequently stressed the growing role and significance of camouflage and deception in achieving success in the conduct of military activities under modern conditions. In their opinion, this was primarily brought about with the appearance of new means of reconnaissance and observation as well as new models of precision guided weapons, which creates additional problems in the enemy's deception plan and in decreasing his own losses in combat equipment and personnel in the event such guided weapons are deployed.

Depending upon the scale of the missions to be achieved, foreign specialists devide camouflage and deception into three types: strategic, operational and tactical. The first has the element of defending the country's territory and includes the concealment of the most important facilities from the moment they are built. This can take place in peace as well as wartime. Operational camouflage and deception depends on affording one's own forces operational surprise in accomplishing combat missions. It includes radio silence, enemy disinformation, concealing the regrouping of troops, dispersing rear units, creating false concentration areas, etc. Tactical camouflage has as its purpose the concealment from the enemy of the number of troop subunits, equipment and individual facilities during any time of the year and at any time during the day or night. It also involved the imitation of troop activity in certain areas with the simultaneous observance of camouflage and deception discipline.

Foreign armies' military manuals note that the commanders at each of these levels, in order to keep losses low, must undertake every measure to maximally conceal personnel and combat equipment from the enemy. It is stressed that this is vitally important to the troops in conducting a modern war where effective, precision weapon systems are employed.

\* \* \*

The foreign press reports that American specialists have successfully completed development on a camouflage paint which can resist poisons and biological agents. It has become standard in the U.S. Army and goes by the designator MIL-C-46168. Lacquers and enamels, which have been used up until now, absorb chemical substances and biological agents landing on them. Hence, when equipment undergoes special treatment, all the paint had to be removed. which led to a significant increase in costs for labor and in metal corrosion. The new chemically-resistant paint is put on in two layers: a base coat (a paint with an epoxy resin base) and a second coat (with a polyurethane base). This two-layer covering forms an external coating that does not absorb the various kinds of chemical poisons. This makes it particularly easy to specially treat equipment under field conditions.

\* \* \*

Equipping forces with high efficiency optical equipment, heat-seeking technology and laser systems requires using sufficiently reliable ways of protecting troop facilities and equipment (both mobile and stationary) from them. A significant role to this end has been given to smoke agents, which recently have undergone further development in the armies of the NATO countries. Western military specialists are developing smoke agents that can be used under the various combat conditions: smoke generators, aviation bombs, cassettes, smoke projectiles, mines, grenades, cartridges and charges, a thermo-smoke device for combat vehicles and other items. A lot of attention is being devoted to looking for new smoke-forming (aerosol) substances that are capable of lowering the effectiveness of modern weapon systems equipped with optical, infrared and radar detection and homing devices.

In order to mount smoke screens on the turrets of foreign tanks, and, in recent years, on armored combat and reconnaissance vehicles, so-called smoke grenade launches are being used that are afixied to the forward portion of the turret. The British models are the most widely used. The grenades, loaded with red phosphorus, are fired out to a range of up to 50 m. It takes from 2 to 3 seconds to form a smoke screen. Its protective effects are maintained, depending upon wind velocity, over the course of 1 to 3 minutes.

In the early 1970s, in the U.S., a thermal smoke device was developed for the M60A1 tank, the operating principle for which is based on forming an artificial fog (smoke) by dispensing atomized diesel fuel into the engine exhaust fumes. The resulting vapor-gas mixture, when it comes into contact with the air, condenses into minuscule droplets and forms a fog. American specialists point out advantages in this device such as the possibility of regulating and maintaining constant smoke formation as well as the repeatability of setting up a smoke screen.

Based on reports from the foreign press, Great Britain has developed a smoke grenade launching mount, the VIRSS (Visual and Infra-Red Smoke Screening System), which is intended to camouflage and lower the visibility of armored targets, primarily tanks, on the battlefield. Jamming in the visual and infrared spectra against various kinds of enemy reconnaissance and guided weapons has been created using this system. A test model of the mount, which has undergone testing on the CHALLENGER tank, consist of 12 cassette blocks

(20 tubes in each) distributed along the forward panel and an electric power generator (to power the circuits which ignite the bursting charges of the grenades).

The effectiveness of the smoke screen, in British specialists' opinion, is achieved by successively firing the grenades into the air 25 m from the tank. As a result, a high temperature region is created (thermal jamming) which lowers the effectiveness of the enemy's infrared devices. Simultaneously, under cover of a smoke screen, the tank can complete the required maneuver over the terrain.

Work in the field of creating smoke projectiles is being pursued actively in the U.S. The new 155-mm XM825 howitzer projectile contains up to 140 smoke elements made in the shape of segments that are stacked on an angle guide rail. When the projectile explodes, these elements spread out over the targeted area with almost no pulverization of the phosphorus. In American specialists' opinion, this munition's design allows one to distribute the smoke elements better, to increase the time of smoke formation (4-6 minutes), and to increase the effectiveness of the projectile as a whole, which exceeds the properties of existing smoke agents by a factor of 2 to 3.

In order to deceive the enemy, the armies of the NATO countries have begun paying a lot of attention to using dummies of various models of military equipment. These dummies are both industrially made as well as fabricated out of on-hand materials. In recent years, wide use is being made of inflatable dummies. This can be explained by the ease in which they can be deployed, their light weight, and the high degree of similarity they have to the models being imitated. The U.S. Army, for example, has mock-ups of self-propelled howitzers, towed artillery ordnance, transporter vehicles, and other military equipment. As a rule, they consist of an inflated tubular body with the required shape formed by sheathing material.

The FRG firm of "Ballonfabrik" produces inflatable mock-ups of tanks, vehicles, planes and anti-aircraft missile systems. In so doing, they use materials which have also the same radar and infrared relection characteristics as the real equipment. They are inflated with air using electric-powered air pumps equipped with devices that automatically turn on and off when the pressure falls below the required level. The dummies are attached to the ground with anchoring spikes and guyropes. It takes only two people to set the dummy up into working position, and, for example, to set up a phony HAWK air defense missile system (ten launching mount dummies), takes 8 men approximately 60 minutes.

The armies of the NATO countries have also paid a great deal of attention to protecting stationary objects with camouflage. In making plans for such measures, the foreign press reports that military specialists analyze the possible ways in which the enemy can attack, and, based on this, develop a general camouflage concept. As a rule, the concept is carried out in stages: the camouflaging of the entire object (distorting the geometrical shape, applying camouflage spots) as well as its most critical components and key facilities (features). Taking into consideration that a strike on such a site will primarily be carried out by air, a lessening of the pilot's visual

observation conditions is considered to be an important point. Hence key attention is being paid to maximally inhibiting or preventing the possibility of observing (identifying) the site.

In foreign experts' opinion, the significance of camouflage and deception in the process of improving the means of reconnaissance and inflicting damage is constantly growing. Future means of camouflage and deception should afford protection to objectives against enemy reconnaissance systems in all ranges of the electromagnetic spectrum under all weather conditions. They should be compact, easy to use, and easy to set up for operation. It has been noted that simultaneously with developing new ways and means of camouflage and deception, a great deal of attention is being devoted to the issue of lowering thermal emissions in armored vehicles by using thermal isolation screens, cooling systems and ventilation.

In recent years, Western specialists have begun paying attention to using various kinds of chemical foaming substances to conceal objects over terrain. In their opinion, an advantage of such a camouflage method is the rather high level of probability of concealing the real shape of the object, the ability to lay down a protective layer quickly, and the possibility to cover large areas.

Foaming substances are used to make dummies of models of military equipment and false targets. Research is also underway on using such chemical substances to camouflage stationary sites to protect them from optical and infrared reconnaissance. Western specialists thus believe that laying down a layer of foaming substance with a corresponding color on a concrete surface (runways, taxiways, access roads) will make its detection more difficult and greatly weaken thermal emmissions from this surface.

On the whole, measures carried out in the armies of the NATO countries to increase the effectiveness of camouflage and deception, are witness to the effort by the leadership of the aggressive block to increase the survivability of troop equipment and facilities under the varying conditions of the combat situation.

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## FOREIGN MILITARY REVIEW

### COMMAND AND CONTROL OF THE U.S. AIR FORCE

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 2, Feb 86 (Signed to press 5 Feb 86) pp 37-42

[Article by Col V. Tamanskiy, Candidate of Technical Sciences, and Col V. Grebeshkov; "Command and Control of the U.S. Air Force"]

[Text] Continuing an unrestrained arms race, U.S. imperialist circles, in striving to achieve military superiority over the Soviet Union and other socialist countries, are continuously increasing the combat power of their air forces, including the units, formations and large strategic formations of intercontinental ballistic missiles (ICBMs); ground-launched cruise missiles; strategic, military-transport and tactical aviation; and also the personnel and equipment belonging to air defense, the warning about nuclear missile strikes and space monitoring.

According to information published in the foreign press, the following systems existed in the U.S. Air Force by the middle of 1985: 1,030 ICBM launch installations (550 "Minuteman-3", 450 MINUTEMAN-2, and 30 TITAN-3); 144 ground-launched cruise missiles deployed in Europe; and more than 9,500 aircraft of combat and supplementary aviation, including 264 B-52 strategic bombers; 64 FB-111 medium bombers; 68 SR-71, U-2 and RC-135 strategic reconnaissance aircraft; approximately 3,400 tactical and air defense aviation aircraft (F-4, F-15, F-16, and F-111 tactical fighters; A-7D and A-10 ground-attack aircraft; RF-4 reconnaissance aircraft and F-106 fighter-interceptors); up to 870 military transport aviation aircraft (77 C-5, 252 C-141, and 539 C-130); approximately 650 tankers (KC-10 and KC-153); 34 E-3 airborne warning [DRLO-long range radar detection] and control system (AWACS) aircraft; and also various purpose airborne command posts, exercise-trainers and exercise aircraft, and other supplementary and special purpose aircraft and helicopters.

In accordance with the U.S.'s main "air and space doctrine", the American Air Force is entrusted with the missions to conduct strategic and operational-tactical operations for the following purposes: to deliver nuclear strikes; to achieve air superiority; to interdict the region of combat operations; to provide direct air support to the ground troops; to conduct air and space reconnaissance; to air lift troops and cargo; and to conduct special operations.

Stemming from the importance of the missions assigned to the Air Force, the U.S.'s military leadership is paying serious attention to the issue regarding the effective employment of the personnel and equipment at its disposal and further increasing their combat readiness. In contemporary combat operations, the employment of the Air Force's diverse and numerous destruction resources, coordinated with other branches of the armed forces by time, place, and missions, is characterized by a large spatial scope, high dynamism and a rapidly changing situation. According to Pentagon experts' opinions, this is possible only with a suitable command-and-control system for the Air Force as a whole, and its individual components, primarily ICBMs, and strategic, tactical and military-transport aviation. U.S. military leadership considers the further development of the Air Force's command-and-control systems to be a principal part of improving the global operational control system of the country's armed forces, to which the U.S. Department of Defense's expenditures for these goals testify.

For example, they appropriated 16 billion dollars in fiscal year 1985, which is 47 per cent of the expenditures for the organization of the U.S. Armed Forces' command-and-control system as a whole.

Below, according to information published in the foreign press, information is presented on the U.S. Air Force's organizational structure, primary command-and-control organs, reconnaissance and communication systems and equipment, and also the prospects for their development.

**ORGANIZATIONAL STRUCTURES** The command-and-control of the Air Force is carried out within the bounds of two types of organizational structures existing in the American Armed Forces, which interact with and permeate one another. They are an administrative and an operational structure (Fig. 1).

With regard to the administrative (permanent) organization, determined by the U.S. constitution, the Air Force is a branch of the Armed Forces headed by the Secretary of the Air Force (a civilian appointed by the president from a number of political figures) and the Air Force Chief of Staff having the rank of full general.

The Air Force consists of 14 Major Commands and 17 Direct Reporting Units, located within the commands' authority.

The Major Commands include: seven combat commands (Strategic Air Command-SAC, Space Command, Military Airlift Command-MAC, Tactical Air Command-TAC, and three Air Force commands in these regions: Europe [USAFE], the Pacific [PACAF], and Alaska [AAC]); five support commands (Air Training Command, Air Force Communications Command, Electronic Security Command, Air Force Systems Command, and the Air Force Logistics Command); and also the Air Force Reserves and the Air National Guard Commands (their units and subunits comprise the Air Force's organized reserves; they are completely equipped with personnel and aviation equipment and can be ready for transfer to the regular forces within 48 hours).

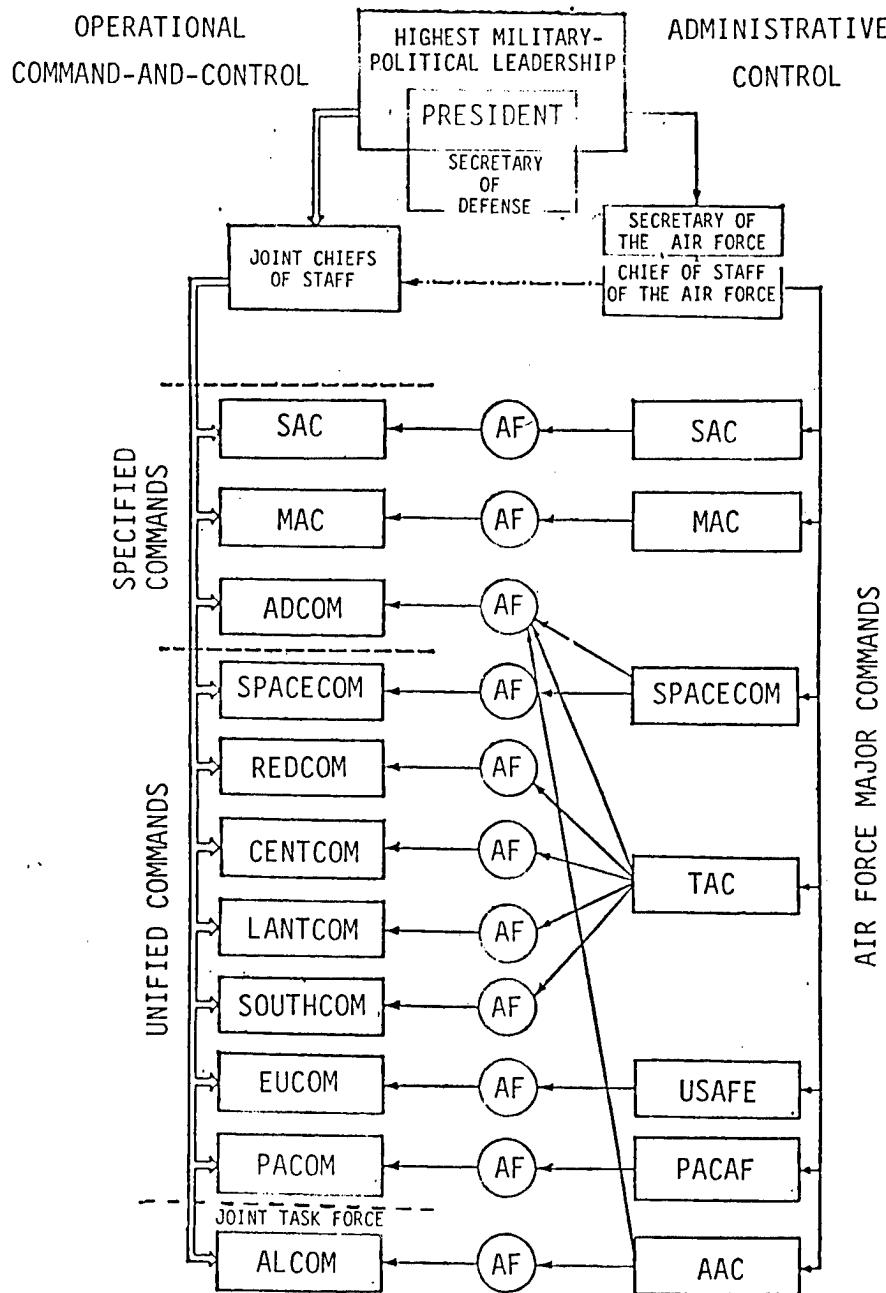


Figure 1. U.S. Air Force Administrative and Operational Structure

Direct reporting units (organizations) include: The Air Force Academy, the Air Force Inspection and Safety Center, the Air Force Intelligence Service and the Air Force Office of Special Investigations, and others.

The Secretary and Chief of Staff of the Air Force carry out the Air Force's administrative control through the commanders of the Major Commands and chiefs of the Direct Reporting Units.

The Secretary and the Air Force Chief of Staff are responsible for working out the combat employment concepts and determining the Air Force's missions in a future war, their development, cadre training, equipping, material-technical support, the organization and conduct of scientific-research and experimental-design work in the realm of aviation and space armament, and the tactical and operational support of the Air Force's command-and-control organs, large strategic formations, formations and units. In the end, they have the responsibility for providing combat ready contingents, equipped with all that is necessary, to the operational commands of the U.S. Armed Forces, and also for the combat readiness of aviation units and formations, existing in the Air Force's Major Commands.

The combat employment and command-and-control of the Air Force is carried out within the bounds of an operational organization, which insures the close cooperation of the branches of the armed forces and their operational control during the conduct of combat operations in any wars and armed conflicts.

The main operational organization of the U.S. Armed Forces are Unified and Specified Commands, and also Joint Task Forces, which are created by an order of the U.S. president for a relative length of time and are tied through the Joint Chiefs of Staff to the Secretary of Defense and the president.

The Unified Commands have the large strategic formations, formations and units of two or more branches of the U.S. Armed Forces in operational subordination, forming corresponding force components (ground forces, air forces and the navy) within these commands. Joint Task Forces also include components of two or more branches of the armed forces and are created when a relatively small force is required to accomplish assigned missions. Specified Commands include formations of one branch of the armed forces.

The Air Force's personnel and equipment assigned to the commands maintain their own organizational structure, and their commanders are simultaneously the commanders of the Air Force's components within these operational large strategic formations.

As the foreign press reports, the interdependence between the Air Force's operational and administrative organizations is ensured, in that the Air Force Chief of Staff is simultaneously a member of the Joint Chiefs of Staff and the leadership of subordinate or assigned personnel and equipment is actually carried out by one and the same officials, who occupy corresponding service positions in these organizational structures.

For example, the Strategic Air and Military Airlift Commands are Major Commands in the administrative organization and are subordinate to the Air

Force Chief of Staff. In the operational organization, they, and their components, are assigned to the U.S. Armed Forces' Specified Commands and are tied directly to the Joint Chiefs of Staff and the Secretary of Defense, which military specialists consider ensures their proficiency and centralized control in an emergency situation and in the event of war, and precludes intervening instances and provides the capability to employ SAC and MAC personnel and equipment flexibly on a global scale.

The Aerospace Defense Command (ADCOM) occupies a primary position in the operational organization. This command was formed several years ago within the limits of the permanent (administrative) organization, and is maintained as a Specified Command in the operational organization. Not having its own integral personnel and equipment, it receives them from three of the Air Force's Major Commands--the Space Command, TAC and the U.S. Air Force in Alaska. The commander of the Air Force Space Command commands them.

In addition, the Aerospace Defense Command is a major part of the unified American and Canadian North American Aerospace Defense Command (NORAD), and its commander is simultaneously the commander of the latter.

The personnel and equipment of the Air Force Space Command are the Air Force's component of the recently-formed joint United States Space Command [USSPACECOM].

As a Air Force Major Command, TAC assigns its personnel and equipment, in addition to ADCOM, to four higher operational large strategic formations: the U.S. Readiness Command, the U.S. Atlantic Command (the TAC commander is simultaneously the commander of the Air Force's components in them), the U.S. Central and U.S. South American Commands (the commander of TAC's Southern Air Division heads the Air Force component) and the Unified Central Command (the commander of TAC's 9th Air Force heads the Air Force's component in this command).

The Pacific Air Force and European Air Force Commands assign their personnel and equipment to corresponding U.S Armed Forces Unified Commands. Their commanders are administratively linked to the Air Force Chief of Staff and, within the operational organization, command the Air Force's elements within the framework of these commands, but are subordinate to the commander-in-chief of the U.S. Armed Forces in the given region.

The Alaskan Air Command is the largest formation in this region, and therefore within the limits of the operational organization, its commander is the commander of a Joint Task Force formed there during an emergency situation. In addition, the U.S. Air Force Alaskan Air Command assigns its personnel and equipment to the ADCOM and forms the Alaskan North American Aerospace Defense Command Region.

In American specialists' views, the Air Force's command-and-control system ensures the centralized and decentralized control of all the forces and their individual components, thereby providing the capability for direct leadership of the available forces in accordance with the plans which have been worked out, and simultaneously gives the decision-making initiative to lower echelons

regarding the employment of forces in a specific unfolding situation within the limits of its competence. They consider that the Air Force's command-and-control system must have high reliability, survivability and stability in all its units and ensure the efficiency of control during the employment of weapons of mass destruction. As the Western press reports, this is achieved by the creation of primary and reserve, and fixed and mobile (ground and air) commands posts, from which the commanders, staff and operational groups accomplish the control of the operations by subordinate personnel and equipment, and organize all types of their combat support and cooperation with the ground troops and navy.

As American military experts figure, as a whole the command-and-control system must ensure the operational effectiveness of all weapon systems and the direct control of the combat missions carried out by the Air Force.

**PRIMARY COMMAND-AND-CONTROL ORGANS** A ramified net of interdependent Air Force command-and-control organs has been created to control the Air Force within the general system of operational leadership.

The work of these organs is ensured by the complex utilization of various communication systems and equipment (satellite, tropospheric, radio-relay, and cable), and also by automated systems for collecting, processing and displaying information, which provides the capability to make optimum decisions in a short period of time.

For example, the Air Force staff has a main (in the Pentagon) and reserve command post, equipped with the 473L automated control system (ACS).

The following are deployed for the control of SAC: a main command post (MCP), deployed in an underground part of SAC's headquarters building (Offutt AFB, Nebraska); the main command posts of SAC's Air Forces (they are simultaneously SAC's reserve command posts); and also the command posts for ICBM wings, air wings and ICBM launch control points. Besides this, control can be carried out from airborne command posts (ACPs) and ICBM launch control points equipped on EC-135 aircraft. All are equipped with the 465L ACS.

The control of ADCOM's personnel and equipment and of the Unified American-Canadian NORAD command is carried out from a main or reserve command post (located respectively at Colorado Springs, Colorado in the U.S. and at North Bay in Ontario Province, Canada), and also from the regional and sector air defense command posts. The first two are located in rock caves, and as it is noted in the foreign press, are the most protected fixed command posts. It is intended to use airborne command posts, the E-3 airborne warning and control aircraft from TAC as reserve command posts for the PVO regions. All these organs are equipped with the 427M ACS system.

The control of MAC is carried out by the commander and staff from an MCP, located at Scott AFB, (Illinois) and from the command posts of its Air Forces: the 21st Air Force (McGuire AFB, New Jersey), the 22nd Air Force (Travis AFB, California), and the 23rd Air Force (Scott AFB, Illinois). The 21st Air Force's command post is simultaneously a reserve command post for MAC.

The most ramified net of control organs is deployed for supporting the combat operations of tactical aviation in a TVD. For this, the entire control system for tactical aviation is tied to the Air Force's command elements within the framework of the corresponding Unified Command.

For example, the commander's command post, which is deployed for his staff at Ramstein AFB (Germany), is the main operational control organ for United States Air Forces Europe. In addition, there are ground reserve command posts and EC-130 ACPs, equipped to operate both in the air or on the ground.

The 485L (a modernized 407L) systems is the main ACS for the command's personnel and equipment. It consists of four subsystems (aviation support, control and warning, air traffic control, and communications) joined to a tactical aviation control center (TACC), which is considered to be a main element of the MCP.

The aviation support system includes air support operational centers (ASOCs), being created in the ground forces' army corps, and to which the tactical aviation control parties (TACP) in divisions, brigades and battalions are subordinated. The TACPs include Air Force communication officers who carry out operational control of forward air controllers (FACs), located in vehicles, vans and target designation aircraft within the troop's combat formations.

The control and warning subsystem is intended for the surveillance of the air situation and embodies its own complex of fixed and mobile control and reporting centers and posts (CRCs, CRPs) and forward air control points (FACPs).

The air traffic control subsystem controls the aircraft flights and movement of all aviation arms. During peacetime, it coordinates its operations with the dispatch services for the control of civil aviation aircraft.

**COMMUNICATION SYSTEMS** The main purpose of communication systems and equipment is to transmit orders, instructions and other control information from higher standing control organs to lower ones, and also reports from lower standing ones concerning the execution of the assigned missions, and reports about the status of their own and enemy troops. The reciprocal exchange of information in support of the Air Force's control is ensured by the U.S. Department of Defense's Unified Information System and the Air Force's specialized subsystems.

The Department of Defense's Unified Information System includes the automatic switching centers of the "Autodin", "Autovon" and "Autosevokom" systems which are connected with one another by satellite, radio relay, radio and cable communication lines.

The Air Force's specialized communication subsystems are used for the employment both in strategic and operational-tactical units. In strategic units they are the primary means for the delivery of commands for the combat employment of ICBMs and strategic aviation. The following subsystems belong to them: the "AFSATCOM" satellite communications system, the transmission of commands using missiles, and HF and LF (487L) radio communications.

The AFSATCOM satellite communication subsystem ensures the delivery of orders from the highest military-political leadership directly to the ICBM launch control points and to the strategic bomber crews on the ground and in the air. Its characteristic feature is the absence of its own integral space component. For signal relay, the navy's FLEETSATCOM satellites are used, and in the future, the Department of Defense's DSCS-3 satellites will begin to be used. A transceiver unit of the AFSATCOM subsystem is installed at SAC command points, ICBM launch control points, and also on strategic bombers.

The subsystem for the transmission of commands using the MINUTEMAN-2 missiles is a reserve communication system, on which an apparatus is installed for the preliminary entry of orders and their transmission after launch on dozens of functioning VHF frequencies from the Joint Chiefs of Staff and the SAC Commander to ICBM launch control points and strategic aviation aircraft on the ground or in the air in extraordinary situations. Receivers in working order and adjusted to these same frequencies are located at the ICBM launch control points and on strategic aviation aircraft.

The two-way HF communication subsystem is used to transmit control commands to the strategic aviation aircraft during their flight to assigned targets.

As it is noted in the foreign press, in case of the breakdown of HF and VHF communications resulting from ionospheric disturbances connected with nuclear explosions, the 487L reserve communication subsystem, the receiver and transmission equipment of which operates in the LF frequency range, can be used for the transmission of combat control orders to the CPs of SAC units and formations, ICBM launch control points and strategic aviation aircraft. It includes four powerful transmitting centers and receiving installations located at the ICBM launch control points and air bases. The transmitting centers, equipped with unwieldy antennas (with a suspension height up to 300 m) are located at Barstow (California), Grand Island (Nebraska), Norfolk (Virginia) and on the island of Puerto Rico.

The specialized communication subsystems for operational-tactical units execute the primary functions for the exchange of information between the control organs of the Air Force commanders in the U.S. Armed Forces Unified Commands and the control posts and organs of the aviation units and formations subordinated to them, and also for the organization of "ground-to-air", "air-to-ground" and "air-to-air" communication nets and lines. The TREE TACK, SINCGARS and JTIDS systems being developed belong to these subsystems. They can be used for the transmission of information in the interests of not only the Air Force, but other branches of the armed forces.

AIR FORCE RECONNAISSANCE SYSTEMS AND EQUIPMENT, as important components of the command-and-control system, are intended for obtaining, processing, and transmitting information about the enemy, necessary for assessing the situation and decision-making. As it is emphasized in foreign press materials, the interacting employment of reconnaissance systems and equipment in strategic and operational-tactical command and control units is required for the most effective execution of the missions of the timely and complete availability of information concerning the enemy. In considering the equipping of the modern armed forces with diverse radioelectronic systems, the main

attention abroad is being paid to the organization and conduct of radioelectronic reconnaissance from the ground air and from space. The characteristic feature of the U.S. Air Force's reconnaissance systems and equipment is their use as information sources in support of not only the command-and-control of the Air Force, but also the command-and-control of the U.S. Armed Forces as a whole. First, this applies to the reconnaissance systems and reconnaissance equipment of a strategic level of control, i.e., to the systems for warning of a nuclear missile attack, space monitoring, and the detection and tracking of air targets.

(To Be Continued)

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## FOREIGN MILITARY REVIEW

### AUTOMATING STAFF WORK IN THE U.S. NAVY

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 2, Feb 86 (Signed to press 5 Feb 86) pp 61-65

[Article by Capt 2nd Rank (Reserve) A. Chirkov; "Automating Staff Work in the U.S. Navy"]

[Text] The American naval high command is paying considerable attention to modernizing staff work and its naval facilities. In particular, they consider that the existing system of data processing and document preparation does not satisfy modern demands placed on the decision making process. It is reported in the Western press, that the fundamental deficiencies in staff work are the low productivity in document preparation, demonstrated by the absence of specialized methods of automating the preparation and transmission of documents and the inadequate utility of existing computers for the specifics of staff work (lack of programs oriented towards user needs). Because of these deficiencies, staffs use less than 20 per cent of available information in preparing operational documents.

In 1984, the Defense Department, with the goal of improving staff work, issued a number of recommendations related to: application of mini-computers, evaluation and selection of a document preparation technology; organizing training for staff officers and provision to them of qualified assistance in practical work.

As indicated in the foreign press, they have decided to use distributed data systems and computer networks with mini-computer installations for data processing at user work stations for staffs and naval installations. Netting the mini-computers in a multi-machine complex is viewed as a qualitatively new step in their application. Computer networks offer possibilities in collection, processing and transmission of information. They permit more effective use of computer power, a greater computer capacity, a widening of possibilities of computer usage and programming opportunities for shared use, distributed data bases, etc.

In the U.S. Navy, it is proposed to modernize staff work by creating specially developed technical methods, as well as a qualitatively new technology for processing and transmission of operational documents using electronic mail.

All these above mentioned items, in American naval specialists' opinion, will produce the so-called "electronic staff"-- the OPNAV of the future. User work stations will become its basic components. Such a station will be linked with subscriber stations, computer (mini and personal computers), memory and printout equipment, and communications capability (internal and external, providing for the transmission and receipt of various forms of data--speech, alphanumeric and graphics.)

Creation of an "electronic staff" allows a considerable reduction in the number of routine operations related to document preparation, to be performed, a decrease in the number of personnel and an increase in productivity of the staff as an organ for managing its subordinate forces. Along with this, automation of administrative staff functions bears directly on its organizational structure and demands that the entire staff be retrained in document preparation with new technical means.

In U.S. Navy specialists' opinion, the typical "electronic staff" must incorporate the following capabilities.

**DATA PREPARATION** In selecting data preparation methods, basic thought must be given to a paperless technology, envisioned as a direct input to the computer from data sources. In this regard the personal computer finds wide application as a processing tool, capable of selecting and dissecting data within pages, correction, editing, verification and printing, in compliance with orthographic rules, and with highspeed printing capability.

**DATA PROCESSING** According to military experts, computers of various types will be utilized in the first phase of automating staff administrative activities. In subsequent phases, a preference must be given to especially-developed computers, which can process alphanumeric data and graphic presentations (including color graphics), edit, put documents in the proper format, print, control the text and number pages and chapter headings in the document.

**INFORMATION DISPLAY** Military specialists believe that graphic data display systems (video terminals) will considerably increase executives' capabilities in staffs, especially during the decision-preparation phase. Graphics permit displaying the correlation of forces, trends in the use of groups of forces, posing problems most clearly and analyze the situation while establishing the different connections between the various quantities. Basically, for analysis, one is presented an opportunity to evaluate several variants of a decision and to select the optimal one.

**DATA TRANSMISSION** In automated staff administrative systems there exist high demands for speed in information transmission and reliability of communications channels. These demands can be met by using coaxial cable, fiber-optics and millimeter means of communications. By interconnecting computers, one can transmit data to a single user or group of users in any form within a few seconds. Future plans call for creating high speed, linked systems for collecting, distributing and transmitting multiform data. Existing means can be used for transmission. These include telephone channels (for

speech), subscriber communications (TELEX, teletype, facsimile) for transmission of alphanumeric information, text and graphic displays.

**DATA STORAGE** When administrative activities of staffs are automated, a large part of the data will be stored in memory banks, including magnetic discs. They are planning to design local and distributed data bases, which will be the basis for establishing a staff information query system for the Navy.

Electronic and optical means will enable automation in staffs of such word processing systems as creating pamphlets and multicolored printing.

Techniques of graphic reproduction and the techniques of operational polygraphics permits transfer of information to macrofiche and microfilm, its automatic search and recovery; making copies from drawings and printed text; magnetic discs for data transmission via communications channels directly from the computer.

Until 1985, Defense Department recommendations, and the Navy concepts of staff and installation automation, were verified in scientific organizations, including the Surface Weapons Center and on the carrier CARL VINSON. The Navy command is planning to employ an experimental automated system of administrative activities, developed at the Surface Weapons Center, as the model for shore based staffs. This system is examined in detail below.

Geographically, the center's basic service stations are remote from each other by considerable distances. Initially, they installed two computers designated for batch data processing. Experience showed that they could not provide the required number of user terminals and did not have sufficient channels for highspeed transmission. In subsequent years, the scope of the computer center increased due to installation of mini-computers and processors of both commercial and military designations. Building on these, several autonomous systems of document workups were developed, which were capable of enhancing the quality of the paperwork (thanks to use of programs which automatically excluded surplus textual information).

The experience of computer technology exploitation has shown, that having computers in a center which are not connected to each other, does not provide sufficient communications channels and on the whole, does not respond to the demands placed on it for automating an installation's administrative processes.

For the future, to create a prototype automated system for shore staffs a distributed information processing network began operation in the center. One of its components was a subnet for electronic document preparation, comprising an integration of computers, communications and an automated process for document creation. The feature of this sub-net, in Western specialists' view, lies in the fact that, instead of one central computer for date processing they use several dispersed mini-computers.

The electronic document processing sub-net connects the multifunctional center user work stations with each other (through local computer nets) and with users in other organizations (through remote nets). The configuration of the

sub-net of electronic document preparation is determined by the disposition of service spaces in the center (see Figure). It connects five Prime Computer series 50 processors (32-bit), having cache and Logic memory(1) a modern system for high level command, and ring protection for the apparatus.

The program created for the data processing network provides a capability to process and store text, manage communications and create compound text with the aid of a 60,000 word dictionary, as well as to verify and correct text, pursuant to orthographic rules. These programs permit users of one computer system to have access to data of any other entering the computer network.

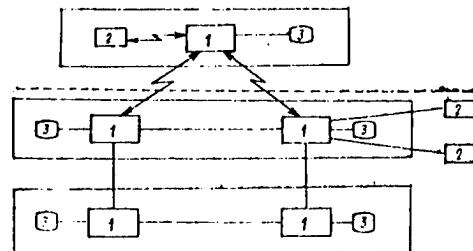
A special operating system, PRIMUS, was designed for the series 50 processors, which relates to multipurpose, multiprogram systems, disperses logic memory and presents data in segmented and page format. It ensures operation of up to eight synchronized communications channels working jointly with the 8-Megabyte operational memory and with the memory on external installations -- 2.4 Gigabytes (for storage of large masses of data).

The PRIMUS system can operate the "Info" data base, which can input and query data and manipulate it, formulating responses. It has simultaneous access to ten files and is capable of functioning as an independent added program or jointly with other programs as a single operating system. The "Info" system can be accessed by low-trained users.

Data exchange between user terminal stations is accomplished by a computer network and data transmission nets. Here they can utilize either single or multimode processes. Communications between them is accomplished through nodal controllers (local nets) or high speed synchronous communications channels (external nets).

To unify technical means of data transmission on internal channels and external communications links, destined for use in automated Naval staff administrative systems, they have experimented with a document exchange system which performs receipt and transmission of files between work stations, equipped with systems for processing textual information and ensuring printout and storage of the documents.

On U.S. Navy ships they have tested and are now installing special automated systems for processing organizational-management data which serves to relieve the staff personnel of administrative functions. Thus, the foreign press has announced the testing of an integrated automated system on the carrier CARM VINSON and the planned installation of the analog system SNAP-2 on 459 ships, submarines and shore installations.



Schematic of an Electronic Document Preparation Sub-Network.

1. Prime Computer Processor
2. Remote User Terminal
3. Internal Storage

The automated integrated system on the carrier uses three computers, a local network and a memory system which includes laser. The first two computers are linked together through a local network covering an expanse of 5 km, through which is exchanged textual, numerical and video data. Television monitors are connected to this net for the transmission of graphic displays. The third computer, which is the master, is installed in the ship's main command post. It can interact with the ship's combat systems.

In the ship's automated administrative system there is an electronic mail dialogue net. It is designated for the command staff (the Captain, senior officers and department heads). It disperses through individual memory data storage and provides information transmission to more than 150 users. Simultaneously with this net there is automated control for execution of plans, work or orders, and to maintain records relating to various ship supply programs.

The SNAP-2 system incorporates the mini-computer AN/UYK-62 (V), with an operating memory of 3 Megabytes and logic memory greater than 12 Megabytes. It includes more than 30 peripheral units.

The U.S. Navy considers that the installation of automated systems for processing organizational-management data on board ship permits a real increase in operational direction in its basic sense by standardizing administrative and operational procedures and it also strengthens control over execution of delivered orders.

From material published in the foreign press, it is clear that in the U.S. Navy, they have designed and are beginning to employ systems for automating administrative staff, ship and installation functions, by which they propose to raise the operational ability of controlling subordinate forces, reduce the apparatus of direction and to free it from single-mode operation.

1. Cache (local processor memory) is the processor's supplementary memory, designed for increasing the fast action of the computing process for decision making. The Logic memory is the operational working package of the operational memory, accessible to the programmer.

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## FOREIGN MILITARY REVIEW

### U.S. NAVY DRONES

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 2, Feb 86 (Signed to press 5 Feb 86) pp 65-67

[Article by Col I. Chistyakov; "U.S. Navy Drones"]

[Text] Recently, the Pentagon has sharply intensified work on development of pilotless aircraft for its naval forces. The Western press explains that such increased attention to drones results from lessons which the American leadership learned from the direct participation of US armed forces in the Lebanon adventure, and of Tel Aviv in 1982. What exactly were these lessons?

Judging from information in the foreign press, first, there were the losses of SIXTH FLEET carrier-based aircraft during the barbarous bombing of the peaceful residential areas of Beirut (in particular, in December 1983, when two airborne "scavengers" were shot down by groundbased AA fire), while at the same time the Israeli Air Force was able to operate with relative ease, even in broad daylight. According to American military specialists, this latter situation was facilitated by well organized advance intelligence on the SAM and AA positions, deployed in the Bekaa Valley, with widespread application of drones and through the use of false targets fired from the strike aircraft and a disorganized PVO defense. In the second place, the absence of gunfire spotting and fire correction led to the virtual ineffectiveness of the 16-inch gunfire from the battleship NEW JERSEY, and, as a result, the bombardment was, according to the remarks in the journal FLEET INTERNATIONAL, practically blind, having produced considerable destruction and casualties in the mountainous regions of Lebanon.

Having analyzed these aforementioned facts, U.S. Navy specialists came to the conclusion that it was currently necessary to have in the fleet drones of two basic types (so called short range and medium range). As a timely solution, it was decided to buy MASTIFF-3 drones from Israel and the reconfigured (as intelligence collectors) American CHUKAR BQM-74C guided airborne targets. The first were assigned to the 2nd Marine Division (at Camp LeJeune in North Carolina) the second type went to the 6th Composite Air Squadron (Norfolk, VA.). It is considered that the presence of similar systems in the Navy will permit service crews to acquire some experience in practical exploitation of drones and simultaneously in the tactics of their combat use.

In August, 1985, the Navy announced a competition for the design of a short-range drone for potential use both on board ship (ship variant) and in Marine units (land-based). According to the general requirements of the Navy and Marine Corps, the common system must be inexpensive, light, small, multi-purpose, capable of takeoff and landing both on board ship and on land and with a capability mainly to conduct battlefield reconnaissance and target designation for fixed artillery fire. In addition, the Marines have put forward supplementary requirements that the drone must be able to be utilized as a transponder for UHF radio signals.

In accordance with Navy requirements, the short-range drone must have the following characteristics: maximum takeoff weight, about 230 kg; airspeed at 3,000m altitude, up to 185 km/hr; operating radius, 50 km; and flight endurance, with an approximately 35 kg payload, 5 hours. The drone must be operated by radio control either from a control point or by a program. In addition, a set of special requirements was put forward touching on takeoff and landing conditions, electromagnetic interference, and the make up of the drone complex, etc. The drone must be able to take off and land on a ship's deck under conditions of 15-25° roll and 5-7° pitch. To accommodate takeoff positions of the land-based drone, there must be an adequate segment of undeveloped space measuring about 200 x 50 m with possible obstacles around its perimeter to an altitude of approximately 17 m. It must take off and land even in crosswinds of 30 m/sec and execute landings in rain whose intensity reaches 50mm/hour. It is most advisable to deploy the control point for the remote control drone and its onboard equipment, communications, receipt and transmission of intelligence information in a standard van, portable either by a 5-ton truck or by CH-46 helicopter. The van complement need not exceed 5 people. The time required to deploy the land-based equipment for the drone complex must be less than one hour and to disassemble (for redeployment to another site) no more than 30 min.

According to information in the Western press, two firms expressed a desire to participate in the competitive design for the Navy's short range drone: Pacific Aerosystems and the Israeli firm Mazlat, who proposed that they develop the drones HERON-26 and PIONEER-1 respectively. The HERON-26 was constructed entirely of composite materials, and equipped with a 26 hp reciprocating engine with a nose propellor. Its onboard equipment could consist of a reconnaissance TV camera, forward-looking infrared (FLIR), panoramic aerial cameras and radio relay communications. The payload is between 35-55 kg, it has a maximum range of 200 km and a practical ceiling of 6000 m, and with a maximum payload, it has about a 5-hour endurance.

PIONEER-1 was designed after the style of MASTIFF and SCOUT, widely used by the Israeli Armed Forces in their Lebanon aggression. They are fitted with 26 hp reciprocating engines; have a payload of 45 kg occupying a space of 0.3 m<sup>3</sup>. The drone's basic characteristics: maximum takeoff weight, 180 kg; fuel weight, 27 kg; ceiling, 4,600 m; flight endurance, 7-8 hours, wing span, 4.9 m; height, 0.8 meters.

In the foreign press it is noted that while in the Navy there has been no decision as to either the future organizational structure of drone units or of the quantity required, the Marine Corps, based on experience gained with the

MASTIFF, considers it mandatory for the future to acquire 108 short- range drones and 18 mobile command posts. The basic organizational element will be the platoon, consisting of a staff squad and 3 squads of drones, in which there will be one command post and 4-6 drones. These short range drones are expected to enter service at the end of 1986. Requests for proposals to participate in the design program to develop a medium-range drone, capable of launch from ship or from an airborne carrier is expected from the Navy in spring of 1986, so that such equipment could enter U.S. Naval service during 1987.

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## FOREIGN MILITARY REVIEW

### LIGHT LANDING SYSTEMS FOR HARRIER AIRCRAFT

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 2, Feb 86 (Signed to press 5 Feb 86) pp 67-70

[Article by Col (Reserve) M. Pavlov; "Light Landing Systems for HARRIER Aircraft"]

[Text] The navies of the leading countries of the aggressive NATO bloc, principally the U.S. and British Navies, intent on the growth of fleet combat power, are paying considerable attention to the development of sea-based aviation, in particular to the modernization of vertical- or short-takeoff-and-landing (VSTOL) aircraft of the HARRIER type and to the creation of new methods of ensuring flight safety.

As emphasized in the foreign press, in the U.S. Navy, the HARRIER is based on the TARAWA-Class multipurpose assault ships and on IWO JIMA-Class amphibious assault helicopter carriers, while in the Royal Navy they are based on the INVINCIBLE-Class ASW carriers. However, according to the foreign press, although the pilots of these aircraft consider themselves sufficiently experienced, frequent accidents occur during flights, especially while conducting night landings on deck.

U.S. Navy aviation experts comment that flight safety with the HARRIER is assured not only by highly professional pilot training, but also to a considerable degree, by modern shipboard light systems for visual landings. Accordingly, the question of its development receives special attention. As early as 1981, based on the results of tests which had been conducted, it was announced that the light landing system on assault ships did not provide for safe HARRIER night flights. In their opinion, the light system then installed on carriers for landing aircraft using a light beam, which formed a landing glide path, did not satisfy the flight safety requirements of these aircraft. This became clear the for following reasons.

First, it is very complicated for a pilot to maintain VSTOL aircraft on a given glide path at the moment of transition from instrument control to visual, especially when braking at distances approximately 1,500 meters from the ship.

Second, in a segment of the glidepath (13-15 km from the ship) the aircraft is flying in a transition mode as the engine nozzles are rotated downward. At this point the majority of aircraft weight is supported by engine thrust, not by the lifting force of the wings, and even an insignificance change in engine revolutions will result in a deviation of flight trajectory from the given glidepath. The pilot must actively operate manual control in order to maintain the aircraft within the narrow beam of the glide path. This is a very difficult problem.

Third, at a distance of about 2 km from the carrier, rotation of the engine nozzles downward to  $40-80^{\circ}$  is accompanied by an increase in altitude, and as a result, the aircraft departs from the glide path. Decreasing the number of revolutions, as is done in normal aircraft, results in breaking through the lower boundaries of the light beam of the glide path. To return to the glide path, it is necessary to increase engine revolutions significantly. In this fashion, attempts by the pilot to maintain the aircraft on the glide path calls for an entirely undesirable use of wing attack angle.

It is also believed that carrier deck illumination systems do not guarantee a safe approach, hover or landing under night conditions. As indicated in the foreign press, up to 1980, the basic methods of night landing onboard ship were: the TACAN navigation system, landing radars, Fresnel lenses (1), shipboard lights and means of deck illumination. HARRIER night flights were undertaken only in good weather with sufficient fuel in the aircraft tanks and within range of a reserve shore landing site.

In February 1980, British defense specialists tested a new light night landing system, VLA (Visual Landing Aids) on the ASW carrier HERMES, following which it was installed in the U.S. amphibious assault ship TARAWA for further test and evaluation. According to the information in the foreign press, it consists of four elements: a Horizontal Approach Path Indicator (HAPI), a Pulse Coded Optical Landing System (PCOLS), a Hover Position Indicator (HPI), and a complex of sodium lamps (Fig. 1). The system simplifies the pilots problem of piloting the aircraft in the various stages of approach to a night or day landing both in clear as well as in bad weather.

The dual-light horizontal approach path indicator points out to the pilot the location of his aircraft relative to the optimal glide path. It consists of two high intensity lights, located on the port side of the ship 91.5 m apart, each of which is stabilized in pitch and distributed in height by Fresnel lenses in two even aspects (red below and white above.) If the pilot approaches the zone covered by the lights below the given glide path, he sees red over red, and if he increases altitude higher than the glide path, then he sees white over white. Whe flying exactly on the glide path, the angle of approach of which is  $2.1^{\circ}$ , the pilot will see red over white (Fig. 2). In clear weather the HAPI lights are visible for distances up to 15 km and serve as supplementary guides for approach along the proper landing courses.

The Pulse Coded Optical Landing Systems (PCOLS), in addition to the steady red and white lights of the HAPI, has supplementary red and white pulsed lights (according to the upper and lower limits of a given glide path with an approximate  $2.8^{\circ}$  angle).

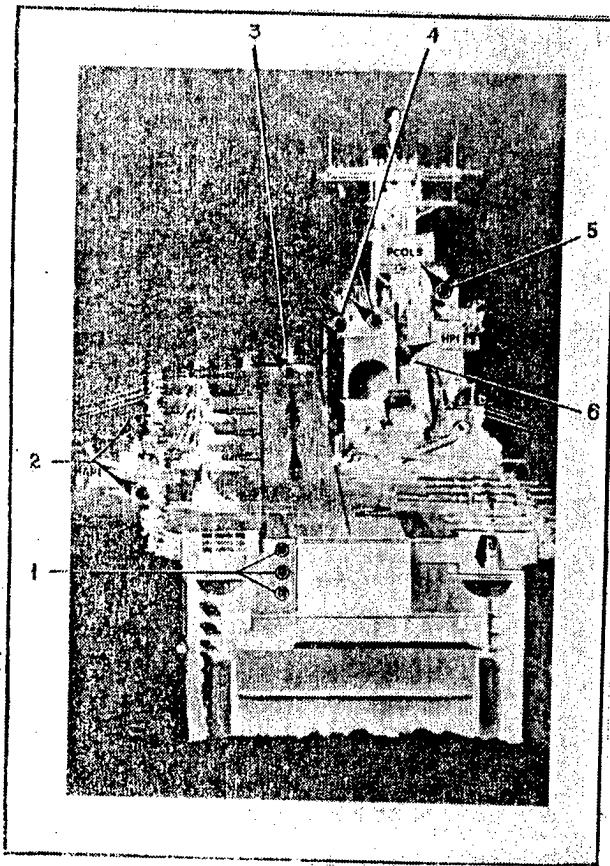


Figure 1. Distribution of Basic Elements of the Light Landing System for HARRIER-Type Aircraft on the TARAWA-Class Amphibious Assault Ship

1. Stern knuckle lights.
2. Horizontal Approach Path Indicator (HAPI).
3. Illumination axis.
4. Light triad.
5. Pulse Coded Optical Landing System (PCOLS).
6. Hover Position Indicator (HPI).

PCOLS lights, located on the after section of the superstructure, are roll stabilized and are visible up to 5 km from the ship. If the pilot is too low in his approach path, he will see a coded red light; if too high, a coded white one; if exactly on the glide path, he will observe a steady red or white light which indicates an overall excellent approach, allowing some increase or decrease from the optimal axis of the glide path.

The aircraft Hover Position Indicator (HPI) is situated in the stern section of the superstructure and the pilot can see it from a distance of about 500 m up to touch down on a given spot on the flight deck. The indicator is stabilized and aids the pilot at night to determine a relative transition speed in three planes. It consists of eight lights, four of which are

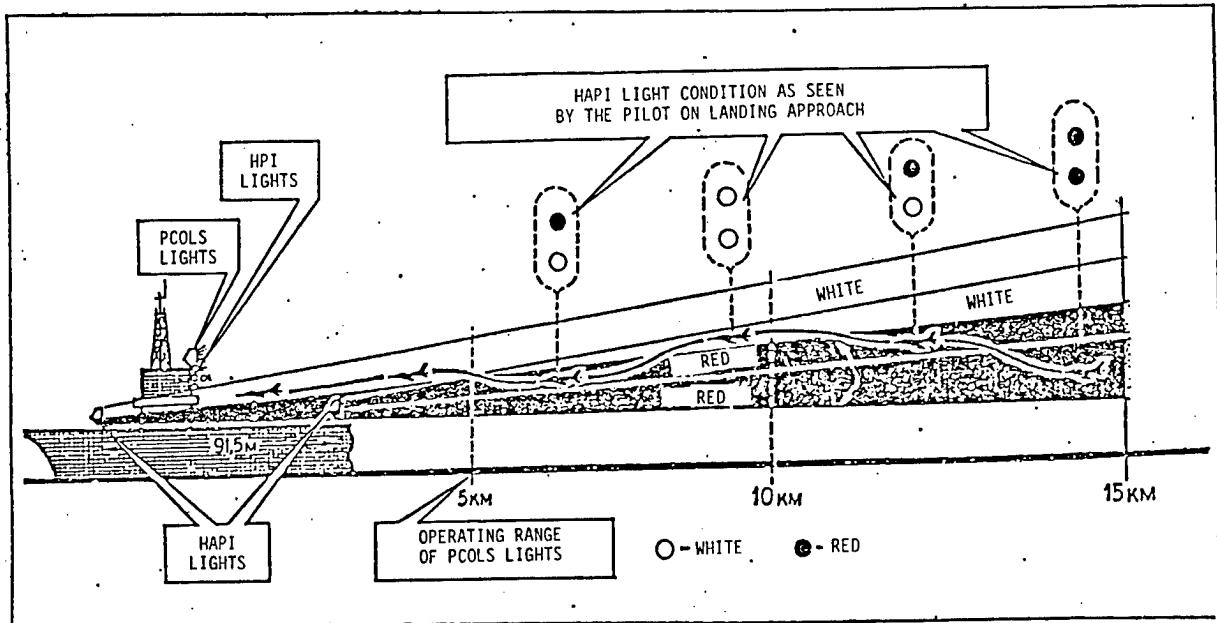


Figure 2. Schematic of an Aircraft Landing Using Light System Assistance at a Distance of 15 km

situated vertically one over the other (the two upper ones are white, the lower, yellow). The distance between them is 46 cm. The vertical row of lights is intersected by a horizontal one, consisting of three green lights, separated by 75 cm. The eighth light, the orientating one, is red and moves from the vertical light row sternward on a special rod, pointed at a  $230^0$  angle from the fore-and-aft plane of the ship. This group of lights, located in three planes, assists the night pilot in orienting himself better in space during the final approach stage and to specify an optimal hover altitude. It is believed that knowledge of the speed with which the lights transition relative to each other during descent, on the framework of altitude or nearness to them, considerably eases aircraft direction from the point of hover to completing the deck landing.

The triad complex of lights is a mandatory part of all light landing systems, and in Western experts' opinion, considerably raises its effectiveness. They are situated on the upper deck in such a way as to illuminate a landing site, the ship's island and the sternknuckle with even light, without blinding the pilot and reducing the amount of shadow to a minimum. These lights do not afford any negating interference with other elements of the light systems for visual landing and give the pilot three possibilities of picking up the ship out to 900 m, which is the most probable distance for the pilot to lose area orientation. It is considered that the proper determination of the size and

contours of the ship at critical flight stages (braking and hovering) are the key factors of safe flight at night.

According to the American press, landing the HARRIER is done in the following manner (see Figs. 1 and 2).

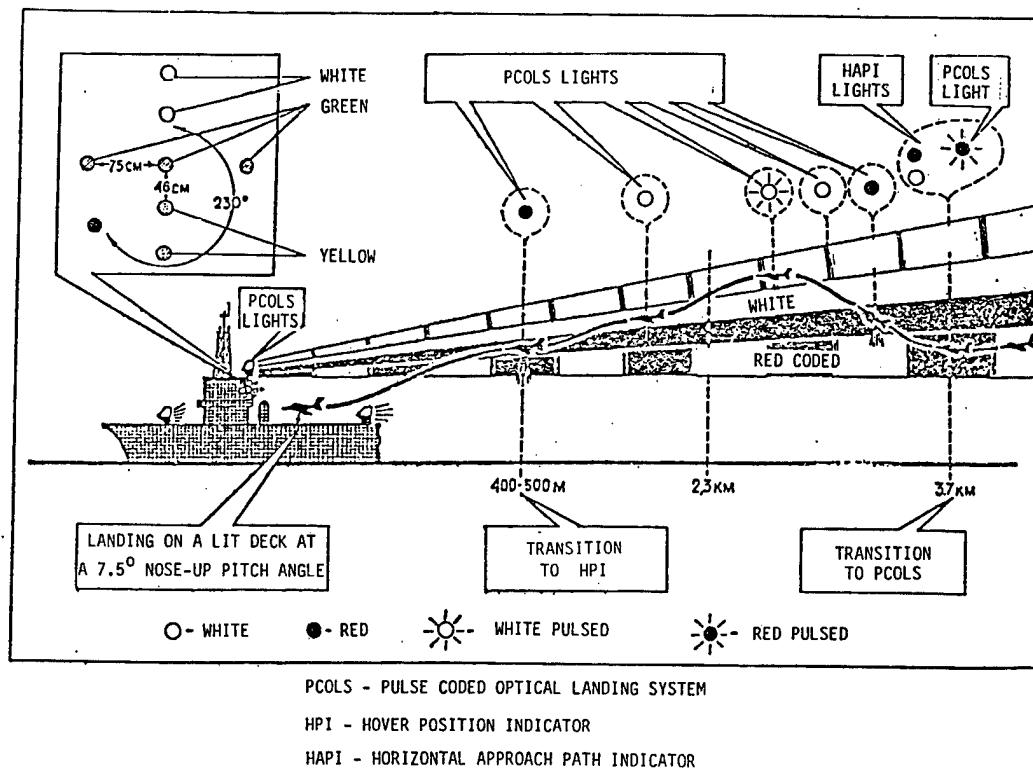


Figure 3. Schematic of an Aircraft Landing Aided by Light Landing Systems (Distance from the Ship, 5 km)

Approach onto a landing course is made using the TACAN navigation system and by commands of the final controller on the landing radar. At a distance of about 15 km in good visibility, the pilot will observe the lights of the HAPI indicator and will enter the glide path at an altitude of about 550 m, trying to guide the aircraft in such a way that he will at all times see a red over white light. Air speed is maintained at 400-450 km/hr.

If the pilot can guide the aircraft directly along the glide path, then, about 5 km from the ship, he will see a red coded light (PCOLS). Four km from the ship he will shift his attention from the HAPI indicator to PCOLS and at an 8° nose-up pitch angle, he commences braking by turning his engine nozzles to 40-80° downward. The aircraft narrowly maintains altitude and enters a different glidepath, depicted by the PCOLS lights. He gradually lowers air speed to 150-200 km/hr. The pilot strives to maintain the aircraft in the glidepath in such a way as to see a red or white light with steady illumination, not permitting the aircraft to "broach" and leave its optimal glidepath. When the

flight becomes stable, the engines begin to transition into such a condition as to maintain speed of descent to about 2 m/sec.

At about 500 m from the ship, the pilot shifts attention to the HAPI indicator and descends to an altitude of 45 m, while strictly out of sight of the illuminated ship. Following that, with the aid of the Hover Position Indicator lights, he orients visually and places the aircraft into a state of stable hover, and at a 7.5° nose-up pitch angle, completes the landing.

According to the American press, despite the work that has been done already on improving and modernizing the basic components of visual light landing systems for the HARRIER during night operations on the assault ship TARAWA, it cannot yet be cited as completed, or responsive to the demands of flight safety, especially in mixed weather conditions. Modernization work continues and the Navy plans to complete it at the end of 1986.

#### FOOTNOTE

1. For details see: ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, No. 3, 1979, p. 59

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## FOREIGN MILITARY REVIEW

### OBSERVATION ISLAND'S NEW RADAR

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 2, Feb 86 (Signed to press 5 Feb 86) pp 93-94

[Article by Lt Col V. Pavlov; "OBSERVATION ISLAND's New Radar"]

[Text] While implementing the policy of total espionage in relations with the USSR, the Pentagon is undertaking intensive efforts to build up its systems and resources for receiving various types of data while distributing them in immediate proximity to the Soviet Union's borders.

Thus, according to Western press information, the U.S. Air Force authorized the Electronics System Command, together with Rtheon, to install on board the missile and space object tracking ship OBSERVATION ISLAND, a new radar. It operates in the super high frequency bands (8-12.5 GHz). This in contrast to the earlier installed phased array AN/SPQ-11 radar COBRA JUDY, which operated in the 2-4 GHz band. The new radar antenna was removed from the ship GENERAL ARNOLD, on which it had been used for receiving telemetric information. Its main (reflecting) surface is parabolic with a 9.1-m diameter and is mounted amidships in OBSERVATION ISLAND on one of the deck superstructures.

In Western military experts' opinion, operation in the 8-12.5 GHz band allows the American specialists to realize a higher resolution of angular coordinates and to gain additional capabilities for detection and selection of targets in a background of interference and false targets. Additionally, it is believed that with the mathematical support of the CYBER 175-112 computer, for the joint operation of two radars in the 2-4 and the 8-12.5 GHz bands, significantly increases the target tracking capabilities not envisioned for the 1-2 GHz band radars, in which the COBRA DANE AN/FPS-108 operates (deployed on Shemya Island in the Aleutian Islands), because of the limitations brought about by the earth's curvature. At the same time, the capabilities for receiving data on target signatures is also enhanced.

The use of information from all the radars, operating in the Pacific area, has led, primarily, to the achievement of military-technical superiority of the U.S. over the Soviet Union.

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